

# EXHIBIT

# O

Confidential - Subject to Protective Order

Page 294

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

- - -  
IN RE: ETHICON, INC. PELVIC :MDL NO. 2327  
REPAIR SYSTEM, PRODUCTS :  
LIABILITY LITIGATION :VOLUME II  
:  
:

THIS DOCUMENT RELATES TO ALL CASES AND  
VARIOUS OTHER CROSS-NOTICED ACTIONS

CONFIDENTIAL - SUBJECT TO PROTECTIVE ORDER

- - -  
January 8, 2014

- - -  
Transcript of the continued deposition of  
THOMAS A. BARBOLT, Ph.D., called for Videotaped  
Examination in the above-captioned matter, said  
deposition taken pursuant to Superior Court Rules of  
Practice and Procedure by and before Michelle L.  
Gray, a Certified Court Reporter, Registered  
Professional Reporter, and Notary Public, at the  
offices of Riker Danzig Scherer Hyland & Perretti  
LLP, Headquarters Plaza, One Speedwell Avenue,  
Morristown, New Jersey, commencing at 9:07 a.m.

- - -  
GOLKOW TECHNOLOGIES, INC.  
877.370.3377 ph| 917.951.5672 fax  
deps@golkow.com

## Confidential - Subject to Protective Order

Page 295			Page 297		
1 APPEARANCES:			1	---	
2			2	INDEX	
3 AYLSTOCK, WITKIN, KREIS & OVERHOLTZ, PLLC			3	---	
4 BY: DANIEL THORNBURGH, ESQUIRE			4		
5 17 East Main Street, Suite 200					
6 Pensacola, Florida 32502					
7 (850) 202-1010					
8 dthornburgh@awkolaw.com					
9 Representing the Plaintiffs					
10					
11 THOMAS, COMBS & SPANN, PLLC					
12 BY: DAVID B. THOMAS, ESQUIRE					
13 BY: PHILIP J. COMBS, ESQUIRE					
14 300 Summers Street, Suite 1380					
15 Charleston, West Virginia 25301					
16 (304) 414-1805					
17 dthomas@tcspllc.com					
18 pcombs@tcspllc.com					
19					
20					
21					
22					
23					
24					
25					
Page 296			Page 298		
1 APPEARANCES VIA TELEPHONE:			1	---	
2			2	EXHIBITS (Cont'd.)	
3 AYLSTOCK, WITKIN, KREIS & OVERHOLTZ, PLLC			3	---	
4 BY: BOBBY J. (BRAD) BRADFORD, ESQUIRE			4		
5 17 East Main Street, Suite 200					
6 Pensacola, Florida 32502					
7 (850) 202-1010					
8 rbaggett@awkolaw.com					
9 Representing the Plaintiffs					
10					
11 FREEARK, HARVEY & MENDILLO, P.C.					
12 BY: RANSOM P. WULLER, ESQUIRE					
13 115 West Washington Street					
14 Belleville, Illinois 62222					
15 (618) 233-2686					
16 rwuller@freeark.com					
17 Representing Heartland Women's Healthcare,					
18 Ltd., and Dr. Elisabeth G. Beyer-Nolen					
19					
20 BONNE, BRIDGES, MUELLER, O'KEEFE & NICHOLS					
21 BY: SUSAN FAYE L. FRANCISCO, ESQUIRE					
22 3699 Wilshire Boulevard, 10th Floor					
23 Los Angeles, California 90010					
24 (213) 738-5842					
25 sfrancisco@bonnebridges.com					
26 Representing Gerald Thorpe, M.D.; Keller vs.					
27 Siddighi, et al., San Bernardino County Superior					
28 Court, case No. CIVDS1307951					
29					
30 VIDEOTAPE TECHNICIAN:					
31					
32 Lee Bittman					
33					
34 TRIAL TECHNICIAN:					
35 Michael Andrews					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					

2 (Pages 295 to 298)

## Confidential - Subject to Protective Order

Page 299			Page 301			
1	---		1	---		
2	EXHIBITS (Cont'd.)		2	EXHIBITS (Cont'd.)		
3	---		3	---		
4			4			
5	NO.	DESCRIPTION	5	NO.	DESCRIPTION	
6	T-2253	10/15/92	403	6	T-2259	E-mail Thread
7		Seven Year Data for Ten	7		3/2/04	
8		Year Prolene Study: ERF-85-219	8		Subject, Reminder on Blue	
9		ETH.MESH.11336034-70	9		Mesh!	
10			10		ETH.MESH.00865322-23	
11	T-2254	ERF Accession No. 83-477	466	11		
12		Project No. 16104		12	T-2260	An Independent
13		Summary		13		Biomechanical Evaluation
14		ETH.MESH.10645237-42		14		of Commercially Available
15				15		Suburethral Slings
16	T-2255	E-mail Thread	508	16		(Pariente)
17		2/27/04		17		ETH.MESH.01221055-58
18		Subject, Mesh		18		
19		ETH.MESH.00863391-93		19	T-2261	LCM Project, Photographs
20				20		Comparing Laser Cut Mesh
21				21		vs. Mechanical Cut Mesh
22				22		
23				23	T-2262	Deposition Subject Matter
24				24		548
25				25		
Page 300			Page 302			
1	---		1	---		
2	EXHIBITS (Cont'd.)		2	EXHIBITS (Cont'd.)		
3	---		3	---		
4			4			
5	NO.	DESCRIPTION	5	NO.	DESCRIPTION	
6	T-2256	E-mail Thread	511	6	T-263	Binder Titled, Seven
7		11/12/04		7		Year Dog Study
8		Subject, TR: Mesh		8		
9		Fraying: Dr. Eberhard		9	T-264	10/15/92
10		Letter		10		618
11		ETH.MESH.02180826-27		11		Seven Year Data for
12				12		Ten Year Prolene Study:
13	T-2257	Telefax, 11/10/04	513	13		ERF: 85-219
14		Letter from Eberhard		14		ETH.MESH.09888187-223
15		In German		15	T-2265	Copies of Pages
16		ETH.MESH.02180828-30		16		From Lab Notebook
17				17		9/22/87
18	T-2258	Translation of Eberhard	513	18		DEPO.ETH.MESH.00000367-68
19		Letter of 10/18/04		19		
20		ETH.MESH.02180833		20		
21				21		
22				22		
23				23		
24				24		
25				25		

3 (Pages 299 to 302)

## Confidential - Subject to Protective Order

Page 303	Page 305
<p>1            - - -</p> <p>2            DEPOSITION SUPPORT INDEX</p> <p>3            - - -</p> <p>4</p> <p>5    Direction to Witness Not to Answer</p> <p>6    PAGE LINE</p> <p>7    None</p> <p>8    Request for Production of Documents</p> <p>9    PAGE LINE</p> <p>10    423    3</p> <p>11    Stipulations</p> <p>12    PAGE LINE</p> <p>13    None</p> <p>14    Questions Marked</p> <p>15    PAGE LINE</p> <p>16    None</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	<p>1    within the IFU, that you were designated as a witness to discuss.</p> <p>2</p> <p>3            Do you recall that IFU statement?</p> <p>4    A.   Yes.</p> <p>5    Q.   Go ahead and take out Exhibit</p> <p>6    Number 2246, which is the IFU that we marked</p> <p>7    yesterday.</p> <p>8            THE VIDEOGRAPHER: Off the record.</p> <p>9            (Brief pause.)</p> <p>10          THE VIDEOGRAPHER: Back on the video record, 9:10.</p> <p>11</p> <p>12          BY MR. THORNBURGH:</p> <p>13          Q.   Doctor, do you have Exhibit</p> <p>14    Number 2246?</p> <p>15    A.   Yes.</p> <p>16    Q.   And do you recall that you had a</p> <p>17    discussion yesterday regarding this claim in the</p> <p>18    IFU?</p> <p>19            The first claim is: Animal studies</p> <p>20    show the implantation of Prolene mesh elicits a</p> <p>21    minimal inflammatory reaction in tissues, which is</p> <p>22    transient, and can -- and is followed by the</p> <p>23    deposition of a thin fibrous layer of tissue, which</p> <p>24    can grow through the interstices of the mesh, thus</p> <p>25    incorporating the mesh into the adjacent tissue.</p>
<p>1            - - -</p> <p>2            THE VIDEOGRAPHER: We're now on the</p> <p>3    record.</p> <p>4            Today is January 8, Year 2014. It's</p> <p>5    9:07 a.m.</p> <p>6            This begins Volume 2, Tape Number 1</p> <p>7    of the videotape deposition of Dr. Thomas A.</p> <p>8    Barbolt.</p> <p>9            Please proceed.</p> <p>10          - - -</p> <p>11          ... THOMAS A. BARBOLT, Ph.D., having</p> <p>12    been previously sworn, was examined and testified as</p> <p>13    follows:</p> <p>14          - - -</p> <p>15          CONTINUED EXAMINATION</p> <p>16          - - -</p> <p>17          BY MR. THORNBURGH:</p> <p>18          Q.   Good morning, Doctor.</p> <p>19          A.   Good morning.</p> <p>20          Q.   How are you doing this morning?</p> <p>21          A.   Very good.</p> <p>22          Q.   Another cold day in New Jersey?</p> <p>23          A.   It will change.</p> <p>24          Q.   Doctor, we talked a little bit about</p> <p>25    the IFU yesterday, and a statement that you were --</p>	<p>1            Do you recall that?</p> <p>2    A.   Yes.</p> <p>3    Q.   From yesterday, right?</p> <p>4    A.   Yes.</p> <p>5    Q.   And you had identified in</p> <p>6    Exhibit 2241 a list of -- I believe it was -- I'm</p> <p>7    sorry. Maybe we didn't mark it yesterday -- the IFU</p> <p>8    binder that you have in front of you.</p> <p>9            Let's go ahead and mark both of those</p> <p>10    binders as exhibits.</p> <p>11          We'll mark the first one as Exhibit</p> <p>12    Number 2248.</p> <p>13          MR. THOMAS: Do you mind if I</p> <p>14    identify the volumes?</p> <p>15          MR. THORNBURGH: Go ahead.</p> <p>16            (Whereupon, a discussion was held off</p> <p>17    the record.)</p> <p>18          MR. THOMAS: For the record, Volume 1</p> <p>19    of the documents that have been provided to the</p> <p>20    plaintiffs in response to the notice of deposition</p> <p>21    for the language in the information for use just</p> <p>22    identified by counsel.</p> <p>23            Exhibit 2248 is Volume 1, which</p> <p>24    contains Tabs 1 through 32 of those documents.</p> <p>25            (Whereupon, a discussion was held off</p>

## Confidential - Subject to Protective Order

Page 307	Page 309
<p>1 the record.)</p> <p>2 MR. THOMAS: Exhibit 2249 is Volume 2</p> <p>3 of the studies which are responsive to the 30(b)(6)</p> <p>4 topic just discussed by counsel. And these are</p> <p>5 Tabs 33 through 34 produced by Ethicon and as</p> <p>6 documents upon which Dr. Barbolt relies in support</p> <p>7 of that designation.</p> <p>8 (Document marked for identification</p> <p>9 as Exhibit T-2248.)</p> <p>10 (Document marked for identification</p> <p>11 as Exhibit T-2249.)</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. Okay. Now, Doctor, do you agree with</p> <p>14 me that this claim in the IFU says that animal</p> <p>15 studies show the implantation of Prolene mesh</p> <p>16 elicits a minimal inflammatory reaction in tissues</p> <p>17 which is transient. Right?</p> <p>18 A. Yes.</p> <p>19 Q. And it discusses in the first</p> <p>20 sentence, first part of that sentence, that the</p> <p>21 animal studies relate to Prolene mesh. Correct?</p> <p>22 A. Yes.</p> <p>23 Q. Okay. And in the -- in the documents</p> <p>24 that you submitted or the list that you submitted as</p> <p>25 part of exhibits numbered 2248 and 2249, the vast</p>	<p>1 Q. Okay. And that study is related to</p> <p>2 sutures, right?</p> <p>3 A. Yes.</p> <p>4 Q. Suture packed with permeable labels.</p> <p>5 I assume that's a study, but that's a suture study,</p> <p>6 correct?</p> <p>7 A. Yes.</p> <p>8 Q. The next one is a epoxy-tipped nylon</p> <p>9 and Prolene biological evaluation.</p> <p>10 That's also a suture document, isn't</p> <p>11 it?</p> <p>12 A. Yes.</p> <p>13 Q. The next tab in your notebook,</p> <p>14 excerpt from NDA 1634, that's just a repeat of</p> <p>15 what's up here, it appears, but from 1973, right,</p> <p>16 also suture?</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question.</p> <p>19 THE WITNESS: Yeah. It's a different</p> <p>20 version.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. A different version, but updated</p> <p>23 version from 1973 related to sutures, correct?</p> <p>24 A. Yes, that's correct.</p> <p>25 Q. The next document is the Prolene mesh</p>
<p style="text-align: center;">Page 308</p> <p>1 majority of those are suture studies, right?</p> <p>2 A. There are some suture studies in that</p> <p>3 list.</p> <p>4 Q. Well, I said vast majority of those</p> <p>5 are suture studies, right?</p> <p>6 A. I didn't make that assessment.</p> <p>7 Q. Okay. Well, let's look at it real</p> <p>8 quick.</p> <p>9 Your Tab Number 1 in Exhibit 2248 is</p> <p>10 a suture study, correct?</p> <p>11 A. Yes.</p> <p>12 Q. Tab 2 is a suture study, correct?</p> <p>13 A. Yes.</p> <p>14 Q. Tab 3 is a suture study, correct?</p> <p>15 A. Yes.</p> <p>16 Q. Tab 4 is a suture study, correct?</p> <p>17 A. Yes.</p> <p>18 Q. Tab 5, it says excerpt from NDA</p> <p>19 16374, package insert, labeling approved 1969.</p> <p>20 That's also a suture NDA, correct?</p> <p>21 A. Yes.</p> <p>22 Q. The Postlethwait study that you have</p> <p>23 listed here isn't a study that you conducted, right?</p> <p>24 A. This is a study from the open</p> <p>25 literature.</p>	<p style="text-align: center;">Page 310</p> <p>1 biological evaluation in rabbits, which is from</p> <p>2 1973, which is the study that we ended talking about</p> <p>3 from yesterday, correct?</p> <p>4 A. Yes.</p> <p>5 Q. And in that study, it showed that</p> <p>6 there was chronic inflammation seen in all rats --</p> <p>7 in all rabbits in that study at the end period of</p> <p>8 that study, at day 28, correct?</p> <p>9 A. I would have to look at the specifics</p> <p>10 there, but there was the record of chronic</p> <p>11 inflammation in some rabbits at the 28-day time</p> <p>12 point.</p> <p>13 Q. And, by the way, that rabbit study</p> <p>14 that you did that formed the basis of the claim in</p> <p>15 the IFU was a short-term study, correct?</p> <p>16 MR. THOMAS: Object to the form of</p> <p>17 the question.</p> <p>18 THE WITNESS: It's a 28-day study.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. That's considered in the laboratory</p> <p>21 science field to be a short-term study, tissue</p> <p>22 reaction study, correct?</p> <p>23 MR. THOMAS: Objection.</p> <p>24 THE WITNESS: Yes.</p> <p>25 BY MR. THORNBURGH:</p>

5 (Pages 307 to 310)

## Confidential - Subject to Protective Order

Page 311	Page 313
<p>1       Q. The next study that you have listed 2 in that binder is a Prolene polypropylene suture 3 tissue response. That's another suture study, 4 correct?</p> <p>5       A. Yes.</p> <p>6       Q. The following study is a suture 7 study, correct?</p> <p>8       A. Yes.</p> <p>9       Q. Then there's another publication from 10 Postlethwait, which is also related to sutures, 11 correct?</p> <p>12      A. Well, I see Tab 14 is not the 13 Postlethwait. That is the next one in the list.</p> <p>14      Q. Well, Tab 14 is suture. Tab 15 is 15 suture, right?</p> <p>16      A. Yes.</p> <p>17      Q. Tab 16, Salthouse, that's a former 18 employee of Ethicon, isn't it?</p> <p>19      A. What was that? Tab 15?</p> <p>20      Q. Yep.</p> <p>21      A. Tab 15?</p> <p>22      Q. The tab after Postlethwait.</p> <p>23      A. Tab 14.</p> <p>24      Q. You said it was 15 a moment ago. 25 Let's go ahead and mark that as 14.</p>	<p>1       A. Yes.</p> <p>2       Q. And as the ladies and gentlemen can 3 see, the document I am holding up, the remaining 4 studies appear to be vast -- the vast majority of 5 these studies are suture studies, right?</p> <p>6            MR. THOMAS: Object to the form of 7 the question.</p> <p>8            BY MR. THORNBURGH:</p> <p>9            Q. Well, let's go through the exercise.</p> <p>10          Tab 16, Ethilon and Prolene ocular 11 tissue response. That's suture, right?</p> <p>12          A. Yeah.</p> <p>13          Q. The next document listed here is 14 another suture study, right?</p> <p>15          A. Yes.</p> <p>16          Q. The following study is another suture 17 study, correct?</p> <p>18          A. Yes.</p> <p>19          Q. The following study, size 5-0 and 20 zero Prolene cobalt and ethylene oxide sterilized, 21 effects of sterilization on tissue reaction.</p> <p>22            That's -- is that -- that was not 23 looking at mesh, was it?</p> <p>24          A. That's a suture study.</p> <p>25          Q. Right. And we're looking at the</p>
<p style="text-align: center;">Page 312</p> <p>1       Tab 15 is Salthouse, right?</p> <p>2       A. 14 is Salthouse.</p> <p>3       Q. Okay. Let's make sure we're on the 4 same page here.</p> <p>5       Tab 14. Salthouse is a former 6 employee of Ethicon, right?</p> <p>7       A. Yes, that's correct.</p> <p>8       Q. And that's also a suture study, 9 correct?</p> <p>10      A. Yes.</p> <p>11      Q. Tab 15 is another suture study?</p> <p>12      A. Yes.</p> <p>13      Q. Now, we can go through all these. I 14 don't want to waste anybody's time here, but you'd 15 agree with me that the vast majority -- the 16 overwhelming majority of these studies that you 17 listed are suture studies, correct?</p> <p>18            MR. THOMAS: Objection to form.</p> <p>19            THE WITNESS: I wouldn't make that 20 statement unless I've gone through the exercise that 21 you're doing. If you've done that, then I have no 22 reason to doubt -- to doubt your conclusion.</p> <p>23            BY MR. THORNBURGH:</p> <p>24      Q. Well, we know from Tab 1 through 15 25 there's only one mesh-related study, right?</p>	<p style="text-align: center;">Page 314</p> <p>1       effects of EO, which is a sterility method, correct?</p> <p>2       A. Yes. It is a sterilization method.</p> <p>3       Q. The next study that you have listed 4 here is another suture study that looked at Procol 5 versus Lubrol, which are antioxidants, additives 6 contained within the resin, correct?</p> <p>7       A. Yes.</p> <p>8       Q. Again, it's related to sutures, 9 right?</p> <p>10      A. Yes.</p> <p>11      Q. Prolene -- the next study is another 12 suture study, followed by another suture study.</p> <p>13            Now we are at the FDA 14 reclassification of Prolene polypropylene 15 non-absorbable sutures.</p> <p>16            That's related to sutures, right?</p> <p>17      A. That's correct.</p> <p>18      Q. The following study is a suture 19 study, right?</p> <p>20      A. Yes.</p> <p>21      Q. Prolene polypropylene suture. That's 22 another suture study, right?</p> <p>23      A. Yes.</p> <p>24      Q. Another suture study followed by 25 that, right?</p>

## Confidential - Subject to Protective Order

Page 315	Page 317
<p>1        A.    Yes.</p> <p>2        Q.    Now we're at the Prolene suture dyed</p> <p>3        size stability study, Number 749. That's clearly a</p> <p>4        suture study, right?</p> <p>5        A.    Yes.</p> <p>6        Q.    Followed by the 91-day ophthalmic</p> <p>7        tissue reaction study in rabbits.</p> <p>8                That's a suture study, right?</p> <p>9        A.    Yes.</p> <p>10       Q.    Followed by a one-month dural tissue</p> <p>11       reaction study of dyed NGP. That's a suture study,</p> <p>12       right?</p> <p>13       A.    Yes.</p> <p>14       Q.    182, intramuscular tissue reaction</p> <p>15       study in rats is a suture study, right?</p> <p>16       A.    Yes.</p> <p>17       Q.    Followed by six-month dural tissue</p> <p>18       reaction absorption efficacy study of ETHISORB,</p> <p>19       which isn't even Prolene, is it?</p> <p>20       A.    That is a Dormier substitute for</p> <p>21       ETHISORB. This is the material that is part of</p> <p>22       TVT-S.</p> <p>23       Q.    It's not -- my question is very</p> <p>24       specific. Okay? It's a yes or no question.</p> <p>25       ETHISORB is not Prolene, is it?</p>	<p>1        MR. THOMAS: Object to the form of</p> <p>2        the question.</p> <p>3                THE WITNESS: To look at the tissue</p> <p>4                reaction, integration, and response.</p> <p>5        BY MR. THORNBURGH:</p> <p>6                Q.    Well, it was looking at -- the</p> <p>7                specific endpoint in that study was looking at --</p> <p>8                for necrosis to determine if the Prolene in the TVT</p> <p>9                was cytotoxic.</p> <p>10       MR. THOMAS: Object.</p> <p>11       BY MR. THORNBURGH:</p> <p>12       Q.    Right?</p> <p>13       MR. THOMAS: Objection to form.</p> <p>14       THE WITNESS: That's one of the</p> <p>15       endpoints of that study.</p> <p>16       BY MR. THORNBURGH:</p> <p>17       Q.    Do you have that study with you?</p> <p>18       A.    Of course.</p> <p>19       Q.    All right. Why don't you pull it out</p> <p>20       and read what the purpose of that study was.</p> <p>21                It should be in Tab 2 of your IFU.</p> <p>22       A.    I'll go to Tab 32 of my list of</p> <p>23       studies.</p> <p>24       Q.    I meant to say Volume 2.</p> <p>25       A.    I am looking on ETH.MESH.05315244,</p>
<p style="text-align: center;">Page 316</p> <p>1        A.    That's correct.</p> <p>2        Q.    Then you have a 28-day intramuscular</p> <p>3        tissue reaction study in rats with polypropylene</p> <p>4        mesh from the TVT device.</p> <p>5                That is a study we looked at</p> <p>6                yesterday that showed a moderate inflammatory</p> <p>7                response that was chronic, right?</p> <p>8        MR. THOMAS: Objection to form of the</p> <p>9        question.</p> <p>10       BY MR. THORNBURGH:</p> <p>11       Q.    I think it was described as a mild to</p> <p>12       moderate inflammatory response, which was chronic,</p> <p>13       correct?</p> <p>14       MR. THOMAS: Object to the form of</p> <p>15       the question.</p> <p>16       THE WITNESS: I think you're thinking</p> <p>17       of the autoclave study that we discussed</p> <p>18       yesterday --</p> <p>19       BY MR. THORNBURGH:</p> <p>20       Q.    I'm sorry. I thought that's what we</p> <p>21       were looking at here.</p> <p>22       So 28-day intramuscular tissue</p> <p>23       reaction study that we discussed briefly yesterday,</p> <p>24       that was a study to look at the cytotoxic effect of</p> <p>25       polypropylene, right?</p>	<p style="text-align: center;">Page 318</p> <p>1        the protocol. The purpose of the protocol. The</p> <p>2        purpose of the study. The purpose of the study is</p> <p>3        to assess the tissue reaction of polypropylene mesh</p> <p>4        from the TVT (Ulmsten) device when implanted in rat</p> <p>5        gluteal muscle for up to 28 days and to compare this</p> <p>6        reaction to that elicited by current production</p> <p>7        Prolene polypropylene mesh.</p> <p>8        Q.    And you recall that that study was</p> <p>9        conducted after the TVT device tested severely</p> <p>10       cytotoxic by one of your laboratories in Ohio,</p> <p>11       right?</p> <p>12       MR. THOMAS: Object to the form of</p> <p>13       the question.</p> <p>14       THE WITNESS: To clarify, this study</p> <p>15       was conducted after an in vitro cytotoxicity test</p> <p>16       that showed -- in fact, there were two studies. One</p> <p>17       showed a moderate in vitro cytotoxicity, and the</p> <p>18       other showed severe in vitro cytotoxicity.</p> <p>19       BY MR. THORNBURGH:</p> <p>20       Q.    So the reason that you had decided to</p> <p>21       conduct the study is to look at the in vivo</p> <p>22       cytotoxicity of the TVT device, correct?</p> <p>23       A.    Well, I just read the purpose of this</p> <p>24       experiment.</p> <p>25       Q.    Doctor, I don't -- Doctor, I mean --</p>

## Confidential - Subject to Protective Order

Page 319	Page 321
<p>1                   MR. THOMAS: Let him answer the 2 question, please, Dan. 3                   MR. THORNBURGH: Well, he's not 4 answering the question. 5                   MR. THOMAS: Yes, he is. 6                   MR. THORNBURGH: He knows the answer. 7 He's not being straightforward with the jury. 8                   The reason that -- the reason why you 9 have -- 10                  MR. THOMAS: Stop just a minute. 11 Stop just a minute. Just a minute. 12                  You're not going to characterize the 13 witness's testimony for the jury or anybody. You 14 can ask him questions. 15                  MR. THORNBURGH: You can move to 16 strike. 17                  MR. THOMAS: If you -- 18 BY MR. THORNBURGH: 19                  Q. Doctor -- Doctor, you know. You are 20 the -- you were the investigator at Ethicon who 21 ordered that this study be conducted, right? 22                  A. Yes. 23                  Q. And you did it for the purpose of 24 showing that the TVT device is not cytotoxic in 25 vivo. That was the reason why you did it, right?</p>	<p>1 language was already in the IFU? 2                  A. Yes. By 2000 that language was 3 already in the IFU. 4                  Q. And the purpose of that study was to 5 look at -- to see if the -- if Triclosan increased 6 the inflammatory response in tissue, right? 7                  A. Yes. 8                  Q. The ISO intracutaneous reactivity 9 test in rabbits of Vypro mesh, Vypro Prolene 10 composite, September 25, 2000 -- 2000, that was a -- 11 that was a study that was -- well, do you know what 12 the pore size of that Vypro Prolene composite was? 13                  MR. THOMAS: Object to the form of 14 the question. 15                  THE WITNESS: I could determine that 16 by looking at the document, but I think it would be 17 considered a large pore mesh. 18 BY MR. THORNBURGH: 19                  Q. Larger pores than are contained 20 within the Prolene TVT, correct? 21                  A. Yes. 22                  Q. The next study is an exploratory 23 91-day tissue reaction study -- let me make sure I 24 got it right -- tissue reaction study in 25 polypropylene-based surgical mesh in rats dated</p>
<p>1                  A. The purpose of this study is as 2 stated in the protocol, which is the overall 3 direction of the study. And that purpose was to 4 assess the tissue reaction of polypropylene mesh 5 from TVT when implanted in rat gluteal muscle for up 6 to 28 days. 7                  Q. Were you not trying to determine 8 whether or not the TVT device was cytotoxic in vivo 9 in this study? 10                 A. Any in vivo cytotoxicity related to 11 TVT mesh would have been revealed during the conduct 12 of this study in response to the purpose to the 13 study. 14                 Q. Another short-term study, correct, by 15 definition in the laboratory scientific community? 16                 A. This is a short-term experiment. 17                 Q. Then you have the 182 intramuscular 18 tissue reaction study in rats using polypropylene 19 mesh with Triclosan. 20                 That was after that statement had 21 already been included in the IFU label, right? 22                 After the statement -- after the 23 statement that animal studies show the implantation 24 of Prolene mesh elicits a minimal inflammatory 25 reaction in tissue which is transient, right? That</p>	<p>1 2001, right? 2                 A. Yes. 3                 Q. After that language was already 4 contained in the IFU, right? 5                 A. Yes. 6                 Q. And, also, not a GLP study, was it? 7                 A. That's correct. 8                 Q. Not a good laboratory practices 9 study, correct? 10                A. It should be differentiated from a 11 FDA GLP study, which is in compliance with federal 12 regulations. 13                All other non-GLP studies conducted 14 at Ethicon are done in the spirit of GLP and are 15 conducted in every manner like a GLP study, except 16 for quality assurance unit oversight. 17                There's the -- following of the same 18 SOPs, the same policies and procedures are applied, 19 and the study is conducted as it would be under GLP 20 other than quality assurance unit oversight. 21                Q. The next study you have listed there 22 is a 28-day tissue reaction study of Prolene 23 polypropylene mesh and autoclave Prolene 24 polypropylene mesh implanted intramuscularly. We 25 looked at that study yesterday. And that study,</p>

## Confidential - Subject to Protective Order

Page 323	Page 325
<p>1 also a short-term study, showed up to a moderate 2 inflammatory response, correct?</p> <p>3 MR. THOMAS: Object to the form of 4 the question.</p> <p>5 THE WITNESS: Yes. It was up to 6 moderate with an average of mild.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. It was mild to moderate, correct?</p> <p>9 That was the summary in the study?</p> <p>10 MR. THOMAS: Object to the form of 11 the question.</p> <p>12 THE WITNESS: I recall it was -- we 13 can check. I recall it was minimal to mild. Let me 14 just look at that quickly.</p> <p>15 Tab 36.</p> <p>16 In that summary, then, the reaction 17 was typical for implanted Prolene mesh and consisted 18 of an initial mild to moderate subacute inflammation 19 which gradually changed with time into a minimal to 20 moderate chronic form body reaction.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. The histological evaluation in 23 comparison to mechanical pullout strength of Prolene 24 mesh and Prolene Soft mesh in a rabbit model. 25 That's dated 2002, right?</p>	<p>1 A. This would be considered relatively 2 large pore size.</p> <p>3 Q. Larger than the pores in the TVT, 4 correct?</p> <p>5 A. Yes.</p> <p>6 Q. A three-month preclinical trial to 7 assess the fixation force of a new TVT-X and a sheep 8 model. That was, I think, a 12-week study, right?</p> <p>9 A. It says three months.</p> <p>10 Tab Number 40.</p> <p>11 Q. Yeah. It would be a short-term 12 study, wouldn't it?</p> <p>13 A. That would be considered a subchronic 14 or mid-term study.</p> <p>15 Q. Not a long-term study, correct?</p> <p>16 A. That's correct.</p> <p>17 Q. And the primary endpoint in that 18 study was to look at the pullout force, correct?</p> <p>19 A. Let me just take a look at 40. I 20 think there were other endpoints.</p> <p>21 Q. Right, but the primary endpoint was 22 to look at the pullout force.</p> <p>23 A. Well, I'll confirm in a moment.</p> <p>24 Q. By the way, did you ever find the 25 pathology report related to this study?</p>
<p style="text-align: center;">Page 324</p> <p>1 A. Yes.</p> <p>2 Q. How many -- how many days or weeks 3 was that study?</p> <p>4 A. Let me confirm.</p> <p>5 That would be Tab 37.</p> <p>6 That study was out to 14 days.</p> <p>7 Implantation.</p> <p>8 Q. So, clearly, a short-term study, 9 correct?</p> <p>10 A. Yes.</p> <p>11 Q. You have a 90-day subchronic toxicity 12 study after intraperitoneal implantation of a 13 laminated composite composed of soft Prolene mesh 14 PDS film and INTERCEED fabric.</p> <p>15 That's not TVT mesh, is it?</p> <p>16 A. No.</p> <p>17 Q. A 24-week intramuscular study in rats 18 comparing trilaminate prototype from Project Coyote 19 of soft Prolene polypropylene mesh, that's clearly 20 not TVT, is it?</p> <p>21 A. That's just another variant of 22 Prolene polypropylene mesh.</p> <p>23 Q. It's not TVT, is it?</p> <p>24 A. No.</p> <p>25 Q. What is the pore size?</p>	<p style="text-align: center;">Page 326</p> <p>1 MR. THOMAS: Object to the form of 2 the question.</p> <p>3 THE WITNESS: We're still looking for 4 that.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. Did you inquire about the lost slides 7 yesterday?</p> <p>8 MR. THOMAS: Object to the form of 9 the question.</p> <p>10 THE WITNESS: No.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Did you inquire with anybody whether 13 or not --</p> <p>14 A. Can I answer the question of a couple 15 ago, and then we can move forward?</p> <p>16 Q. Sure. I think my question was --</p> <p>17 MR. THOMAS: Excuse me. He's looking 18 for the primary endpoint.</p> <p>19 MR. THORNBURGH: I am trying to 20 refresh his memory.</p> <p>21 MR. THOMAS: If he -- he's looking 22 right now. If you want to ask him a different 23 question --</p> <p>24 MR. THORNBURGH: I was going to 25 remind him that my question related to the primary</p>

## Confidential - Subject to Protective Order

Page 327	Page 329
<p>1 endpoint of the study, Dave.</p> <p>2 MR. THOMAS: Please, Dan. This is</p> <p>3 going to be a long day, and you're very contentious</p> <p>4 with the witness and with me this morning. I</p> <p>5 understand we didn't end on the best of terms</p> <p>6 yesterday. Excuse me --</p> <p>7 MR. THORNBURGH: I am being at my</p> <p>8 best behavior right now.</p> <p>9 MR. THOMAS: Well, please. Just slow</p> <p>10 down. Let the witness answer the question, and let</p> <p>11 him finish his answer before you ask another one.</p> <p>12 That's what he's doing right now.</p> <p>13 THE WITNESS: The aim of this</p> <p>14 preclinical study was to evaluate less invasive TVT</p> <p>15 mesh, and then it goes on.</p> <p>16 BY MR. THORNBURGH:</p> <p>17 Q. Goes on to say what?</p> <p>18 MR. THOMAS: He's going to tell you,</p> <p>19 Dan.</p> <p>20 THE WITNESS: Studying the fixation</p> <p>21 phase divided into three components.</p> <p>22 And then -- yeah. So I would</p> <p>23 conclude that the primary objective is biomechanical</p> <p>24 with a histology component included.</p> <p>25 BY MR. THORNBURGH:</p>	<p>1 That would be considered a short-term</p> <p>2 study, correct?</p> <p>3 A. That would be a mid-term study.</p> <p>4 Q. Not a long-term study, right?</p> <p>5 A. That's correct.</p> <p>6 Q. How long does it take before mesh</p> <p>7 starts to contract?</p> <p>8 MR. THOMAS: Object to the form of</p> <p>9 the question; scope.</p> <p>10 BY MR. THORNBURGH:</p> <p>11 Q. Are you prepared to answer that</p> <p>12 question today?</p> <p>13 MR. THOMAS: Object to the form of</p> <p>14 the question.</p> <p>15 THE WITNESS: No -- because it</p> <p>16 depends on a lot of factors. And if there are any</p> <p>17 specific studies you want to talk about that are in</p> <p>18 the compilation of documents that we've provided,</p> <p>19 I'd be glad to talk about those.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. Well, Ethicon studies showed that</p> <p>22 Prolene mesh can shrink up to 30 to 50 percent,</p> <p>23 right?</p> <p>24 MR. THOMAS: Object to the form of</p> <p>25 the question; scope.</p>
<p>1 Q. What steps did you take yesterday to</p> <p>2 locate the pathology report?</p> <p>3 MR. THOMAS: Object to the form of</p> <p>4 the question.</p> <p>5 THE WITNESS: I did not take any</p> <p>6 steps.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Did you make an inquiry to Joerg</p> <p>9 Holste whether or not any of the meshes that were</p> <p>10 explanted in that study showed encapsulation of the</p> <p>11 mesh?</p> <p>12 A. No.</p> <p>13 Q. Did you make an inquiry with anybody</p> <p>14 yesterday as to whether or not any of the slides</p> <p>15 were lost?</p> <p>16 MR. THOMAS: Object to the form of</p> <p>17 the question.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. During or -- during or after that</p> <p>20 study was conducted?</p> <p>21 A. No.</p> <p>22 Q. And in the next document you have</p> <p>23 listed here is an investigational study of Swine</p> <p>24 models to evaluate mesh contraction and tissue</p> <p>25 integration over a 13-week period.</p>	<p>1 Dan, that's not even on the</p> <p>2 designations --</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. Are you prepared to discuss that</p> <p>5 today, Doctor?</p> <p>6 A. No.</p> <p>7 Q. Well, I mean, what is part of the</p> <p>8 designations is porosity studies. And that --</p> <p>9 porosity studies, clearly, one of the things that</p> <p>10 you can look at is mesh contraction.</p> <p>11 Did you look at any studies involving</p> <p>12 mesh contraction --</p> <p>13 MR. THOMAS: Object.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. -- other than -- other than the one</p> <p>16 that you have listed here?</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question; scope.</p> <p>19 THE WITNESS: This is one that we've</p> <p>20 conducted, Tab 41.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. What mesh was involved in that case?</p> <p>23 A. I'll have to look at the detail.</p> <p>24 Q. Let me just try to simplify. Was TVT</p> <p>25 mesh involved in that case?</p>

## Confidential - Subject to Protective Order

Page 331	Page 333
<p>1        A.    Let me confirm.</p> <p>2        Q.    Perhaps it was the heavyweight small</p> <p>3        pore.</p> <p>4        MR. THOMAS: You've asked three</p> <p>5        questions. You haven't let him answer any of them</p> <p>6        yet. Let him answer a question, please.</p> <p>7        THE WITNESS: Three mesh implants</p> <p>8        were studied: Prolene mesh, Prolene Soft mesh, and</p> <p>9        ULTRAPRO mesh.</p> <p>10        Although it doesn't indicate the</p> <p>11        version of Prolene mesh, the date of the study,</p> <p>12        6/21/07, would suggest that it's 5 mil flat mesh.</p> <p>13        BY MR. THORNBURGH:</p> <p>14        Q.    Which is a different mil that is</p> <p>15        used -- different Prolene fiber size than is used in</p> <p>16        the TVT Prolene mesh, correct?</p> <p>17        A.    Yes.</p> <p>18        Q.    Do you know what the pore sizes are</p> <p>19        in that particular Prolene mesh that was studied?</p> <p>20        MR. THOMAS: Object to form; asked</p> <p>21        and answered.</p> <p>22        THE WITNESS: I know that it's less</p> <p>23        than the 6 mil TVT mesh.</p> <p>24        BY MR. THORNBURGH:</p> <p>25        Q.    Does it say current production,</p>	<p>1        A.    No, it does indicate it is Prolene</p> <p>2        Soft. Prolene Soft is one of the meshes that were</p> <p>3        evaluated.</p> <p>4        Q.    What you can say for certain is that</p> <p>5        that mesh wasn't the Prolene mesh contained within</p> <p>6        TVT?</p> <p>7        A.    I can't say that for certain, but I</p> <p>8        believe it is not.</p> <p>9        Q.    You have the biocompatibility risk</p> <p>10        assessment report for Proceed's surgical mesh. Is</p> <p>11        that a large -- is that a lightweight large pore</p> <p>12        mesh?</p> <p>13        MR. THOMAS: Object to the form of</p> <p>14        the question.</p> <p>15        BY MR. THORNBURGH:</p> <p>16        Q.    The Proceed?</p> <p>17        A.    This would be Prolene Soft mesh.</p> <p>18        Q.    So it's a 3.5 lightweight mesh,</p> <p>19        correct?</p> <p>20        A.    Yes.</p> <p>21        Q.    Not the same mesh in TVT, correct?</p> <p>22        A.    That's correct.</p> <p>23        Q.    Then you have the biocompatibility</p> <p>24        risk assessment report for the Gynecare TVT product</p> <p>25        family. That's -- that would be related to --</p>
<p style="text-align: center;">Page 332</p> <p>1        Prolene mesh?</p> <p>2        A.    No, it does not.</p> <p>3        Q.    So you don't know sitting here today</p> <p>4        if that's the current production at the time or if</p> <p>5        that was some sort of prototype of the Prolene mesh,</p> <p>6        do you?</p> <p>7        MR. THOMAS: Object to the form of</p> <p>8        the question.</p> <p>9        THE WITNESS: I think if it were a</p> <p>10        prototype, it would indicate such.</p> <p>11        What I have in front of me is not</p> <p>12        sufficient to positively identify that was 5 mil</p> <p>13        mesh, but all the data points are in that direction.</p> <p>14        BY MR. THORNBURGH:</p> <p>15        Q.    You can't tell from looking at that</p> <p>16        if it's a 3.5 mil Prolene mesh, can you?</p> <p>17        MR. THOMAS: Object to the form of</p> <p>18        the question.</p> <p>19        THE WITNESS: Yes, I can.</p> <p>20        BY MR. THORNBURGH:</p> <p>21        Q.    How can you tell?</p> <p>22        A.    Because that would be Prolene Soft</p> <p>23        mesh.</p> <p>24        Q.    And it doesn't indicate it's Prolene</p> <p>25        Soft. Is that what you're saying?</p>	<p style="text-align: center;">Page 334</p> <p>1        that's the TVT product, right?</p> <p>2        A.    Yes.</p> <p>3        Q.    So you would agree with me that the</p> <p>4        vast majority of the documents that you listed in</p> <p>5        your list regarding the statement that Prolene mesh</p> <p>6        elicits a minimal inflammatory reaction in tissue</p> <p>7        which is transient, either were suture studies, not</p> <p>8        mesh studies, short-term studies, not long-term</p> <p>9        studies or mid term, not long-term studies, or</p> <p>10        involved -- some of the studies involved meshes that</p> <p>11        were large pore lightweight meshes, correct?</p> <p>12        MR. THOMAS: Excuse me. Object to</p> <p>13        the form of the question.</p> <p>14        THE WITNESS: All of those studies</p> <p>15        are included in this list.</p> <p>16        BY MR. THORNBURGH:</p> <p>17        Q.    Did you ever conduct a study or did</p> <p>18        Ethicon ever conduct a study that looked at the</p> <p>19        TVT -- strike that.</p> <p>20        Did Ethicon ever conduct a study that</p> <p>21        looked at the Prolene mesh in the TVT and compare it</p> <p>22        to a negative control to determine the inflammatory</p> <p>23        response in TVT?</p> <p>24        A.    No. That would not be so useful.</p> <p>25        Q.    You -- ULTRAPRO was compared to</p>

## Confidential - Subject to Protective Order

Page 335	Page 337
<p>1 Prolene, wasn't it?</p> <p>2 MR. THOMAS: Object to the form of</p> <p>3 the question; scope.</p> <p>4 THE WITNESS: In the study that I</p> <p>5 just mentioned, yes.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Well, do you recall -- do you recall</p> <p>8 doing a study that looked at --</p> <p>9 A. I just want to clarify which study</p> <p>10 that was, because we've been talking about a lot of</p> <p>11 studies.</p> <p>12 That would be Tab 42.</p> <p>13 Q. Can you read off the name of that</p> <p>14 study for me?</p> <p>15 A. An investigational study of Swine</p> <p>16 models to evaluate mesh contraction and tissue in</p> <p>17 growth over a 13-week period.</p> <p>18 I misspoke.</p> <p>19 It's the same study, but the study</p> <p>20 that I intended to call out was Tab 41.</p> <p>21 Tab 42 is simply the pathology report</p> <p>22 for that study.</p> <p>23 Q. Do you recall doing a study that</p> <p>24 looked at the tissue response to ULTRAPRO and</p> <p>25 compared it to the old construction heavyweight</p>	<p>1 THE VIDEOGRAPHER: We're now going</p> <p>2 off the video record. It's now 9:45.</p> <p>3 (Short break.)</p> <p>4 (Whereupon, the court reporter read</p> <p>5 back the requested portion of the record.)</p> <p>6 THE VIDEOGRAPHER: Back on the video</p> <p>7 record, 9:56.</p> <p>8 THE WITNESS: Now, it's my</p> <p>9 understanding that the literature search results</p> <p>10 from the two literature searches conducted have been</p> <p>11 provided to the plaintiff's counsel. That includes</p> <p>12 all the studies in their entirety that came from</p> <p>13 that literature search of RDCS.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. Is that list larger than the list</p> <p>16 that you provided in Exhibit 2241?</p> <p>17 MR. THOMAS: Those are the lists of</p> <p>18 the gross searches that were provided from 1960 to</p> <p>19 1980 and then the two searches from 1980 to 2000.</p> <p>20 Those are the lists that we're talking about.</p> <p>21 MR. THORNBURGH: I am asking the</p> <p>22 witness.</p> <p>23 MR. THOMAS: That's fine.</p> <p>24 THE WITNESS: Could you repeat?</p> <p>25 BY MR. THORNBURGH:</p>
Page 336	Page 338
<p>1 Prolene and found that the tissue response was --</p> <p>2 there's a greater inflammatory response with the old</p> <p>3 construction 6 mil Prolene compared to the ULTRAPRO?</p> <p>4 MR. THOMAS: Object to the form of</p> <p>5 the question.</p> <p>6 THE WITNESS: I don't believe so.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Do you know if that study was ever</p> <p>9 conducted?</p> <p>10 MR. THOMAS: Object to the form of</p> <p>11 the question.</p> <p>12 THE WITNESS: I am not aware of such</p> <p>13 a study. It's not a study that we provided.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. Like we talked about yesterday when</p> <p>16 we talked about the porosity studies, was there a</p> <p>17 larger list that was created by you or someone else</p> <p>18 which contained more studies that are currently</p> <p>19 listed in this section regarding the studies related</p> <p>20 to the statement that the inflammatory response is</p> <p>21 minimal and transient?</p> <p>22 MR. THOMAS: I'm sorry. Object to</p> <p>23 the form of the question. I'm trying to go with my</p> <p>24 screen and I've lost my --</p> <p>25 (Brief interruption.)</p>	<p>1 Q. Yes. Is there a larger list of</p> <p>2 studies than is contained in your section regarding</p> <p>3 the minimal and transient inflammatory response?</p> <p>4 A. Yes, there is a larger list, as I've</p> <p>5 described.</p> <p>6 From those two literature searches,</p> <p>7 studies were obtained from R&amp;D central file, which</p> <p>8 were felt to be relevant to each of the topics under</p> <p>9 discussion.</p> <p>10 Some of those studies turned out not</p> <p>11 to be relevant. Those studies that were determined</p> <p>12 to be relevant to each of the topics for discussion</p> <p>13 were then compiled for this particular topic. You</p> <p>14 see this list of 44 documents.</p> <p>15 Q. Now, if there was a study that looked</p> <p>16 at and compared ULTRAPRO, which is a lightweight</p> <p>17 large pore mesh, to Prolene 6 mil mesh, that study</p> <p>18 did not make it onto your list, did it?</p> <p>19 A. It would have fallen out of the</p> <p>20 original R&amp;D central file search, and it would have</p> <p>21 been included in this list, because it would have</p> <p>22 contained TVT mesh, even though it's a comparison to</p> <p>23 some other mesh.</p> <p>24 So that would have definitely been</p> <p>25 relevant.</p>

## Confidential - Subject to Protective Order

Page 339	Page 341
<p>1       Q. You don't see any study on this list 2       that you provided -- strike that. 3            You chose what documents -- what 4       studies would be listed in your IFU list of studies 5       that support the claim that the inflammatory 6       response is minimal and transient, right? 7       A. Yes. 8       Q. And nowhere on that list is a study 9       that compared ULTRAPRO to Prolene and found that 10      ULTRAPRO elicited a more minimal inflammatory 11      response, correct? 12      A. That is not on this list, and I am 13      not aware of such a study. 14      Q. That would have been a relevant study 15      to include on this list if it existed, correct? 16      MR. THOMAS: Object to the form of 17      the question. 18      THE WITNESS: Yes. 19      BY MR. THORNBURGH: 20      Q. That would have been a relevant study 21      to do to compare the difference in inflammatory 22      response of a lightweight large pore mesh to TVT, 23      correct? 24      MR. THOMAS: Object to the form of 25      the question.</p>	<p>1       mesh in TVT would elicit a minimal transient 2       inflammatory response, right? 3       A. That 1973 study needs to be 4       considered in context with the NDAs for Prolene 5       suture, where long-term studies were conducted two 6       years in rat, three years in dog, three months in 7       rabbits, looking at the same polypropylene -- 8       Prolene polypropylene fiber that's used in Prolene 9       mesh. 10      It's the leveraging of those 11      long-term studies and the 1973 study, which is 12      relatively short term as you point out, forms the 13      basis for the information provided by preclinical to 14      the folks that prepare the IFU. 15      MR. THORNBURGH: Move to strike; 16      nonresponsive. 17      BY MR. THORNBURGH: 18      Q. In that list -- in fact, in this 19      entire list of 43 studies, 44 studies, that is the 20      only Prolene mesh study that formed the basis for 21      the claim in the IFU that the Prolene and TVT will 22      elicit a minimal transient inflammatory response, 23      correct? 24      MR. THOMAS: Object to the form of 25      the question; scope.</p>
<p style="text-align: center;">Page 340</p> <p>1       THE WITNESS: Yes, it would have been 2       a relevant study. 3      BY MR. THORNBURGH: 4       Q. Of the 44 studies that made it onto 5       your final list to support the claim that TVT 6       elicits a minimal transitory inflammatory response, 7       31 of those studies are suture studies, correct? 8       A. I accept your count. 9       Q. Well, Tab 1 through Tab 31, correct? 10      A. I've not been keeping track. 11      Q. And of the 13 studies involving 12      mesh -- 13      A. Excuse me. Just for clarification, I 14      was just scanning the 1 through 31, and I see that 15      Number 10 is, in fact, a 1973 study with Prolene 16      mesh. It's the same mesh. 17      Q. Oh, I'm sorry. Correct. 18      So of the first 31 studies, only one 19      involved Prolene mesh, correct? 20      A. Yes. 21      Q. And that one study in the first 31 22      was a short-term study, correct? 23      A. Yes. 24      Q. And that's the study that formed the 25      basis of the language in the IFU that the Prolene</p>	<p style="text-align: center;">Page 342</p> <p>1       THE WITNESS: I don't believe the 2       results from the 1973 Prolene mesh study that went 3       for 28 days can be assessed without considering the 4       long-term results from the Prolene suture studies 5       documented in the Prolene suture NDA. 6       MR. THORNBURGH: Move to strike; 7       nonresponsive. 8      BY MR. THORNBURGH: 9       Q. Answer my question, please. 10      MR. THOMAS: He did answer your 11      question. 12      BY MR. THORNBURGH: 13      Q. My question is: In this list of 43 14      studies -- 44 studies, the short-term 28-day study 15      from 1973 was the only Prolene mesh study that 16      formed the basis for the claim in the IFU that the 17      Prolene in TVT will elicit a minimal transitory 18      inflammatory response. Correct? 19      A. Yes. 20      Q. Of the 13 mesh studies contained 21      within your IFU list of studies that support the 22      claim that Prolene mesh in TVT elicits a minimal 23      transient inflammatory response, approximately 12 of 24      those were either short-term or mid-duration 25      studies, correct?</p>

## Confidential - Subject to Protective Order

Page 343	Page 345
<p>1                   MR. THOMAS: Object to the form of 2 the question.</p> <p>3                   THE WITNESS: I accept your count.</p> <p>4 BY MR. THORNBURGH:</p> <p>5                   Q. You also have been designated as the 6 person most knowledgeable regarding preclinical or 7 animal studies that support the claim in the IFU 8 that the material is not absorbed, nor is it subject 9 to degradation or weakening by the action of tissue 10 enzymes, correct?</p> <p>11                  A. That's correct.</p> <p>12                  MR. THOMAS: Object to the form of 13 the question.</p> <p>14                  I think if you look at the topic that 15 he was identified on, it was a single sentence. And 16 that is the scope of the designation.</p> <p>17                  THE WITNESS: Well, I stand 18 corrected. I have in front of me a compilation of 19 studies that address a topic for discussion, and 20 that topic indicates -- and I quote: The material 21 is not absorbed, nor is it subject to degradation or 22 weakening by the action of tissue enzymes. End 23 quote.</p> <p>24 BY MR. THORNBURGH:</p> <p>25                  Q. Which is the exact question I asked.</p>	<p>1 start over again. I have the right one now.</p> <p>2                   The designation made by plaintiffs 3 states, Paragraph 3: The identity of, the location 4 of, and the substance of any and all studies, data, 5 and/or other evidence that form the basis of the 6 following claim/statement included in the attached 7 instructions for use for the TTV products. The 8 material is not absorbed, nor is it subject to 9 degradation or weakening by the action of tissue 10 enzymes.</p> <p>11                  That's the designation.</p> <p>12 BY MR. THORNBURGH:</p> <p>13                  Q. So you've been designated as the 14 person most knowledgeable regarding studies or 15 evidence that support the claim in the IFU that the 16 Prolene mesh in TTV is not absorbed, nor is it 17 subject to degradation or weakening by the action of 18 tissue enzymes. Correct?</p> <p>19                  A. Yes.</p> <p>20                  Q. In other words, the claim by Ethicon 21 in the IFU is that the Prolene mesh in the TTV will 22 not degrade, correct?</p> <p>23                  MR. THOMAS: Object to the form of 24 the question.</p> <p>25                  THE WITNESS: It says that it's not</p>
<p style="text-align: center;">Page 344</p> <p>1                  MR. THOMAS: I don't think you did.</p> <p>2 BY MR. THORNBURGH:</p> <p>3                  Q. Let me ask it again. I'll read from 4 the transcript.</p> <p>5                  You also have been designated as the 6 person most knowledgeable regarding preclinical or 7 animal studies that support the claim in the IFU 8 that the material is not absorbed, nor is it subject 9 to degradation or weakening by action of tissue 10 enzymes.</p> <p>11                  Correct?</p> <p>12                  MR. THOMAS: Object to the form of 13 the question. That's not the designation.</p> <p>14                  The designation is and it reads 15 verbatim in terms that you've written: The identity 16 of, the location of, and the substance of any and 17 all studies, data, and/or evidence that form the 18 basis of the following claim/statement contained in 19 the attached instructions for use for the TTV 20 products. Animal studies show that implementation 21 of Prolene mesh elicits a minimal inflammatory -- 22 I'm sorry.</p> <p>23                  MR. THORNBURGH: You're looking at 24 the wrong designation.</p> <p>25                  MR. THOMAS: Okay. I am. Let me</p>	<p style="text-align: center;">Page 346</p> <p>1 absorbed, nor is it subject to degradation or 2 weakening by the action of tissue enzymes.</p> <p>3 BY MR. THORNBURGH:</p> <p>4                  Q. Is it Ethicon's position that the 5 studies and evidence support the claim that the 6 Prolene mesh in TTV will not degrade?</p> <p>7                  MR. THOMAS: Object to the form of 8 the question.</p> <p>9                  THE WITNESS: In a general sense.</p> <p>10 BY MR. THORNBURGH:</p> <p>11                  Q. What do you mean by "in a general 12 sense"?</p> <p>13                  A. Well, that statement is different 14 from the statement that's in the IFU.</p> <p>15                  Q. Part of the statement is that the 16 Prolene mesh in the TTV will not degrade, right, by 17 the tissue enzymes in the human body. Correct?</p> <p>18                  A. Yes.</p> <p>19                  Q. Is that Ethicon's position?</p> <p>20                  A. Yes.</p> <p>21                  Q. Is it Ethicon's position that the 22 Prolene in the TTV is subject to degradation under 23 certain conditions?</p> <p>24                  MR. THOMAS: Object to the form of 25 the question.</p>

## Confidential - Subject to Protective Order

Page 347	Page 349
<p>1                   THE WITNESS: That's not what this 2        says. 3        BY MR. THORNBURGH: 4           Q. Well, is it Ethicon's position that 5        the Prolene mesh will degrade under certain -- in 6        certain environments? 7           MR. THOMAS: Object to the form of 8        the question. 9           THE WITNESS: It's Ethicon's 10       position, as outlined in these two folders that 11       contain 49 different studies, that the material in 12       TVT mesh, which is Prolene polypropylene, is not 13       absorbed, nor is it subject to degradation or 14       weakening by the action of tissue enzymes. 15       BY MR. THORNBURGH: 16           Q. Now, you agree with me that Ethicon 17       has conducted studies which have shown that in vivo, 18       in the human body, or in animal studies, the Prolene 19       mesh does, in fact, suffer from surface cracking on 20       the outer layer of the mesh? 21           MR. THOMAS: Object to the form of 22       the question. 23           THE WITNESS: You're making reference 24       to surface changes observed in a seven-year dog 25       study?</p>	<p>1                   MR. THOMAS: Excuse me. I need to 2        take a very quick break. 3           THE VIDEOGRAPHER: 10:16, off the 4        video record. 5                   (Short break.) 6           THE VIDEOGRAPHER: Back on the video 7        record, 10:20. 8        BY MR. THORNBURGH: 9           Q. Doctor, you would agree that the 10       human body, due to the presence of O<sub>2</sub> in various 11       forms, is a potentially powerful oxidizer? 12           MR. THOMAS: Object to the form of 13       the question; scope. 14           THE WITNESS: They can't be too -- I 15       would agree in general, but they can't be too 16       powerful, because too powerful would be incompatible 17       with life. 18        BY MR. THORNBURGH: 19           Q. Powerful enough to degrade 20       polypropylene, right? 21           MR. THOMAS: Object to the form of 22       the question. 23           THE WITNESS: That would need to be 24       determined. 25        BY MR. THORNBURGH:</p>
<p style="text-align: center;">Page 348</p> <p>1        BY MR. THORNBURGH: 2           Q. No, there's more than that, but we'll 3        talk about the dog study. 4           But you agree that there have been 5        studies conducted at Ethicon that show degradation 6        of the surface layer of the Prolene mesh? 7           MR. THOMAS: Object to the form of 8        the question. 9           THE WITNESS: I only know of one 10       study looking at surface changes in Prolene suture. 11       That would be the seven-year dog study. 12       And that would be -- that would be 13       Tab 33, seven-year data for ten-year Prolene study. 14       ERF 85-219 1992. 15       BY MR. THORNBURGH: 16           Q. Did you look at the five-year data? 17           A. Yes, as part -- well, the five-year 18        endpoints were part of this study. 19           MR. THOMAS: Just for the record, 20        that tab has been supplemented by this additional 21        disclosure. I'll make sure the witness has that 22        available to him. 23           THE WITNESS: If we need to talk 24        about the seven-year dog study, this would be the 25        one to -- to discuss.</p>	<p style="text-align: center;">Page 350</p> <p>1           Q. Well, let me look at a document I 2        believe you had listed on your list of evidence. 3           MR. THORNBURGH: We'll mark it as 4        Exhibit 2250. ETH.MESH.10575391. 5                   (Document marked for identification 6        as Exhibit T-2250.) 7        BY MR. THORNBURGH: 8           Q. This is Critical Reviews in 9        Biocompatibility. You've seen this? 10           A. Yes. 11           Q. Before, right? 12           A. Yes. 13           Q. It appears that the authors of this 14        document is -- C.C. Chu? 15           A. Yes. 16           Q. And the referee is Postlethwait. Am I 17        pronouncing his name correctly? 18           A. I am not certain. I don't know him. 19        That sounds good to me. 20           Q. Do you know Dr. Chu? 21           A. I've met him once. 22           Q. Okay. And the title of this document 23        is the degradation of biocompatibility -- I'm sorry. 24        Strike that. 25                   The degradation of -- strike that.</p>

## Confidential - Subject to Protective Order

Page 351	Page 353
<p>1           The title of this, what appears to be  2    a book or a chapter in a book, is the degradation  3    of -- "The Degradation And Biocompatibility Of  4    Suture Material," right?  5           A. Yes.  6           Q. Where does this come from? What's  7    the critical reviews and biocompatibility; do you  8    know?  9           A. Well, I've seen critical reviews in  10   toxicology before. I think this is an attempt by  11   CRC press to put forward review articles by experts,  12   considered experts in the field, that would  13   summarize what is known about a particular topic up  14   to a certain point in time.  15           Q. And this is 1985, right?  16           A. Yes.  17           Q. This is before the TVT was marketed,  18   correct?  19           A. Yes.  20           Q. In fact, it's before the TVT was  21   designed and developed, correct?  22           A. Yes.  23           Q. Do you find this to be authoritative?  24           A. Up to 1985, yes. I think it reflects  25   what was generally known to be so in the field.</p>	<p>1           chance to review this before today, right?  2           A. I've read through this document at  3    one point.  4           Q. The authors here in this paragraph  5    are talking about polypropylene, right?  6           MR. THOMAS: Which paragraph are you  7    talking about?  8           MR. THORNBURGH: I'm sorry. The  9    third paragraph on Page 288, Bates number ending in  10   5419.  11           THE WITNESS: They're talking about  12   polyethylene sutures of which polypropylene is one.  13   BY MR. THORNBURGH:  14           Q. Okay. And in the highlighted  15   section, the authors write: Although this class of  16   polymer is resistant to hydrolysis, it is  17   susceptible to oxidative degradation. Oxidation is  18   not as well known as hydrolysis in biomedical  19   polymers in 1985. The human body, due to the  20   presence of O<sub>2</sub> in various forms, is a potentially  21   powerful oxidizer.  22           Liebert and others examine the rate  23   of oxidation of polypropylene fibers with and  24   without antioxidants implanted subcutaneously in  25   hamsters. They found that the pure fiber without</p>
<p style="text-align: center;">Page 352</p> <p>1           Q. And this document was -- if you look,  2    there's an ETH.MESH. number on it, which would  3    indicate that this document was within the files at  4    Ethicon, correct?  5           A. Yes. I believe it's in -- here as  6    Tab 22 in the IFU three-folder.  7           MR. THOMAS: Object to the form of  8    the question.  9   BY MR. THORNBURGH:  10          Q. How did you find this document which  11    made it to your list of supporting evidence  12    regarding the claim in the IFU that the Prolene TVT  13    does not degrade by the actions of enzymes in the  14    human body?  15          A. It was one of the references that FDA  16    provided when they reclassified Prolene  17    polypropylene suture from Class 3 to Class 2.  18          And I think I -- yes. And that would  19    be Tab 28 in the folder, IFU 3, entitled "FDA  20    Reclassification Of Prolene Polypropylene  21    Non-Absorbable Sutures, October 12, 1990."  22          Q. Now, the authors -- turn with me to  23    Page 288 of the critical reviews.  24          The ETH.MESH. number is 10575419.  25          The authors are -- you've had a</p>	<p style="text-align: center;">Page 354</p> <p>1    antioxidants degraded by an oxidative mechanism  2    similar to high temperature autoxidation.  3           The degradation began to occur after  4    only about ten days, and this initiation period  5    lasted about 108 days.  6           The degradation product -- do you  7    know what that -- what that means right here, C  8    equals O?  9           A. It is a carbonyl group.  10          Q. So: The degradation product, the  11    carbonyl group, was observed in the form after  12    99 days of implantation. Whether this observation  13    is applicable to polypropylene suture material is  14    not known and needs to be further studied.  15          Do you see that?  16          A. Yes.  17          Q. How many studies are you aware of  18    that Ethicon did to determine if the Prolene in TVT  19    can degrade as a result of or including as a result  20    of oxidation in vivo inside the body?  21          A. There are roughly -- well, there  22    are -- there are 49 documents in these two -- two  23    binders labeled IFU 3 that support the statement  24    that's the subject matter topic that the material is  25    not absorbed, nor is it subject to degradation or</p>

## Confidential - Subject to Protective Order

Page 355	Page 357
<p>1   weakening by the action of tissue enzymes.</p> <p>2   Q.   How many preclinical studies were</p> <p>3   done that looked at the primary endpoint degradation</p> <p>4   of the Prolene fiber in TVT?</p> <p>5            MR. THOMAS: Object to the form of</p> <p>6   the question.</p> <p>7            THE WITNESS: Every study where TVT</p> <p>8   was implanted, there is an opportunity to assess</p> <p>9   whether or not there's any degradation of the</p> <p>10   filaments and any resulting effects from that.</p> <p>11   BY MR. THORNBURGH:</p> <p>12   Q.   What types of -- what types of tests</p> <p>13   are performed to determine degradation of polymer</p> <p>14   filaments?</p> <p>15   A.   The key endpoints to make a</p> <p>16   determination as to whether or not a material fiber</p> <p>17   would be degraded would be to look at quantitative</p> <p>18   parameters, like molecular weight and, perhaps most</p> <p>19   importantly, tensile strength.</p> <p>20            In the absence of loss of molecular</p> <p>21   weight and in the absence of a loss in tensile</p> <p>22   strength, one cannot conclude that there's been any</p> <p>23   impact or degradation on a fiber.</p> <p>24   Q.   Do you know what I mean by when I say</p> <p>25   amorphous zones or amorphous regions of the Prolene</p>	<p>1   crystalline regions offering the most strength of a</p> <p>2   fiber compared to the amorphous regions.</p> <p>3   BY MR. THORNBURGH:</p> <p>4            Q.   One way of looking for degradation of</p> <p>5   Prolene would be through FTIR analysis, correct?</p> <p>6            MR. THOMAS: Object to the form of</p> <p>7   the question; scope.</p> <p>8            THE WITNESS: That could be a way,</p> <p>9   and, more likely, IR microspectroscopy, where there</p> <p>10   is a very specific focus on areas of interest.</p> <p>11            But, again, that's an analytical</p> <p>12   chemistry kind of area. Although I have some</p> <p>13   understanding of it, depending on how much detail</p> <p>14   you would need, I may or may not be able to help.</p> <p>15   BY MR. THORNBURGH:</p> <p>16            Q.   And you're not at least prepared</p> <p>17   today to talk about carbonyl bands that show up on</p> <p>18   FTIR microscopy which would indicate oxidation of</p> <p>19   the Prolene fibers, correct?</p> <p>20            A.   That's right. I do not have enough</p> <p>21   depth in that area.</p> <p>22            Q.   Another way of analyzing degradation</p> <p>23   of a polypropylene like Prolene would be to look at</p> <p>24   melting point, right?</p> <p>25            A.   Again, that's -- that's a polymer</p>
Page 356	Page 358
<p>1   fiber?</p> <p>2   A.   I have a general understanding.</p> <p>3   Q.   What is your understanding of</p> <p>4   amorphous zones or amorphous regions of the Prolene</p> <p>5   fiber?</p> <p>6            MR. THOMAS: Object to the form;</p> <p>7   scope.</p> <p>8            THE WITNESS: They're not</p> <p>9   crystalline, and they do not offer much contribution</p> <p>10   in the way of tensile strength.</p> <p>11   BY MR. THORNBURGH:</p> <p>12   Q.   They're less stable than the</p> <p>13   crystalline bulk Prolene, correct?</p> <p>14   MR. THOMAS: Object to form; scope.</p> <p>15   THE WITNESS: They're different areas</p> <p>16   of the polymer.</p> <p>17   BY MR. THORNBURGH:</p> <p>18   Q.   Less stable areas of the polymer?</p> <p>19   MR. THOMAS: Excuse me. Do you want</p> <p>20   him to answer your question?</p> <p>21   THE WITNESS: I don't know that I</p> <p>22   would characterize it as less stable. That might be</p> <p>23   a question for a polymer chemist. But, clearly,</p> <p>24   there are differences in mechanical characteristics</p> <p>25   between amorphous and crystalline regions, the</p>	<p>1   chemistry kind of term, and I'm not prepared to</p> <p>2   address any melting point endpoints.</p> <p>3            Q.   Do you know -- do you know generally</p> <p>4   what I mean by melting point?</p> <p>5            MR. THOMAS: Object to the form of</p> <p>6   the question.</p> <p>7            THE WITNESS: It's the point -- it's</p> <p>8   the temperature at which a substance melts.</p> <p>9   BY MR. THORNBURGH:</p> <p>10            Q.   Did you look at any -- before you</p> <p>11   came in today, did you look at any studies that were</p> <p>12   conducted by Ethicon that looked at the melting</p> <p>13   point of pieces of the outer surface of Prolene mesh</p> <p>14   which, when the study was conducted, showed evidence</p> <p>15   of oxidation of the polypropylene?</p> <p>16            MR. THOMAS: Object to the form of</p> <p>17   the question.</p> <p>18            THE WITNESS: I've not reviewed any</p> <p>19   melting point data.</p> <p>20   BY MR. THORNBURGH:</p> <p>21            Q.   And in any event, these authors write</p> <p>22   that the human body is potentially a powerful</p> <p>23   oxidizer, right?</p> <p>24            A.   It's as it's stated.</p> <p>25            Q.   And there's a discussion about a</p>

## Confidential - Subject to Protective Order

Page 359	Page 361
<p>1 study by Liebert. Did you read the Liebert study 2 before you came here today?</p> <p>3 A. I am looking for it right now. Give 4 me a moment to go through this list.</p> <p>5 I don't see it in this list, but I 6 have reviewed that publication.</p> <p>7 Q. And you're familiar, then, in the 8 Liebert study that when Liebert and his fellow 9 investigators examined the rate of oxidation of 10 polypropylene fibers, they found degradation in 11 animal study -- in animal studies of the 12 polypropylene fibers which did not contain 13 antioxidants, correct?</p> <p>14 A. That's correct, as reflected by C.C. 15 Chu in this review article, when he says they found 16 that the pure fiber (without antioxidant) degraded 17 by an oxidation mechanism similar to high 18 temperature autoxidation.</p> <p>19 What he doesn't say here and what is 20 called out in the Liebert paper is that the fiber 21 with antioxidant did not show any evidence of 22 degradation.</p> <p>23 Q. Right. And one of the topics that 24 you've been designated to discuss is leaching, 25 right?</p>	<p>1 BY MR. THORNBURGH: 2 Q. And could you explain to the ladies 3 and gentlemen of the jury what we mean by "leach"? 4 A. Leaching means the movement of 5 substances from an implant into the surrounding 6 tissue.</p> <p>7 Q. Okay.</p> <p>8 MR. THOMAS: While you're doing this, 9 are you going to ask him questions about the 10 leaching notebooks?</p> <p>11 MR. THORNBURGH: Not yet. We will be 12 asking questions about leaching.</p> <p>13 MR. THOMAS: We'll put them away, 14 then.</p> <p>15 BY MR. THORNBURGH: 16 Q. You've seen the Sunoco material 17 safety data sheet previously, haven't you? 18 MR. THOMAS: Object to the form of 19 the question. 20 I think this was covered at length in 21 his prior deposition.</p> <p>22 THE WITNESS: I think you showed this 23 to me at the last deposition.</p> <p>24 BY MR. THORNBURGH: 25 Q. Right. And this has been premarked</p>
<p>1 A. Yes.</p> <p>2 Q. And some of the studies that you 3 looked at showed that the antioxidants, Santonox R 4 and Lubrol, can leach out of the Prolene fiber, 5 correct?</p> <p>6 A. Let me take a look at the...</p> <p>7 Q. You don't recall that off the top of 8 your head?</p> <p>9 A. I'd rather pull the folder and be 10 able to give you a more complete answer.</p> <p>11 This is a folder that contains --</p> <p>12 MR. THOMAS: There are three of them.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. Let me ask you this question real 15 quick.</p> <p>16 A. Let me finish your other.</p> <p>17 Q. Well, I'm going to withdraw the 18 original question. I'm going to try to streamline 19 these.</p> <p>20 Is it Ethicon's position that the 21 antioxidants in the polypropylene Prolene fibers in 22 TVT can leach from the fibers?</p> <p>23 MR. THOMAS: Object to the form of 24 the question.</p> <p>25 THE WITNESS: Yes.</p>	<p>1 as Exhibit Number T-2111. 2 Now, if you turn with me to -- 3 Well, do you have an understanding 4 that this is the same Prolene homopolymer as 5 contained within the TVT Prolene?</p> <p>6 MR. THOMAS: Object to the form of 7 the question; scope.</p> <p>8 THE WITNESS: Yeah. It's not the 9 original supplier, but those suppliers may have 10 changed. It may be the current supplier. I don't 11 know that for certain, but if you say that 12 this -- this is the source of the polypropylene 13 resin for polypropylene-based products, I would not 14 disagree.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. And Sunoco is a petro oil company, 17 correct? Are you familiar with that?</p> <p>18 A. Yes. Yes. It's Sun Oil company.</p> <p>19 Q. If you turn with me to the fourth 20 page, which is ETH.MESH.02026594, you would agree 21 with me that this MSDS for polypropylene resin shows 22 that -- under the incompatibility, that the 23 following materials are incompatible with the 24 product: Strong oxidizers, such as chlorine, peroxide, chromates, nitric acid, perchlorates,</p>
	18 (Pages 359 to 362)

## Confidential - Subject to Protective Order

Page 363	Page 365
<p>1 concentrated oxygen, sodium hypochlorite, calcium 2 hypochlorite, and chlorine and nitric acid, correct? 3 A. Yes. 4 MR. THOMAS: You left out 5 permanganates. 6 BY MR. THORNBURGH: 7 Q. Permanganates, chlorine, and nitric 8 acid, correct? 9 A. Yes. That's the list. 10 Q. And you would agree with me that 11 according to the evidence that you reviewed in 12 preparing for this 30(b)(6) deposition, that the 13 human body, as a result of the inflammatory response 14 to foreign objects or foreign materials, can create 15 strong oxidizers in the body? 16 MR. THOMAS: Object to the form of 17 the question. 18 THE WITNESS: Strong is a relative 19 term. But I believe that the strong oxidizers as 20 called out in this MSDS, that would make -- that 21 would be incompatible with polypropylene would not 22 be biocompatible in the body. 23 BY MR. THORNBURGH: 24 Q. Well, according to Exhibit 25 Number 2250, which you listed on your list of</p>	<p>1 one before that. 2 That answer is yes. There are two 3 folders -- 4 MR. THOMAS: Excuse me. Let him 5 answer the question. 6 BY MR. THORNBURGH: 7 Q. My question was: Did you 8 personally -- 9 A. No. Your question was on behalf of 10 Ethicon. 11 Q. Did you personally? 12 MR. THOMAS: Okay. Stop. Let's 13 start over. And you ask a question that he can 14 answer. You have five pending. 15 BY MR. THORNBURGH: 16 Q. Did you personally conduct any 17 studies that had the primary endpoint of looking at 18 degradation in animal studies? 19 MR. THOMAS: Object to the form of 20 the question. 21 THE WITNESS: Well, I understood I 22 was here to talk on behalf of Ethicon and not myself 23 personally. 24 MR. THOMAS: You can answer the 25 question. Did you personally do that?</p>
<p style="text-align: center;">Page 364</p> <p>1 evidence supporting your claims, the authors wrote 2 that the human body, due to the presence of O<sub>2</sub> in 3 various forms, is a potential powerful oxidizer. 4 Correct? 5 A. Again, in my opinion, they're not as 6 strong chemically as these oxidizers called out in 7 this MSDS that would not be compatible with 8 polypropylene fiber or polypropylene material. 9 These oxidizers are not 10 biocompatible. They are corrosive. They would not 11 be compatible with tissue. 12 Q. Well, have you ever personally 13 studied -- have you personally studied -- strike 14 that. 15 Have you -- on behalf of Ethicon, did 16 you do any in vivo animal studies to look at, as a 17 primary endpoint, degradation? 18 MR. THOMAS: Object to the form of 19 the question; scope. 20 BY MR. THORNBURGH: 21 Q. Do you know sitting here right now 22 whether or not you ever did such a study? 23 MR. THOMAS: Which question do you 24 want him to ask -- 25 THE WITNESS: Well, I'll answer the</p>	<p style="text-align: center;">Page 366</p> <p>1 THE VIDEOGRAPHER: It's 10:44. We're 2 going off the video record. 3 This concludes Volume 2, Tape 1 of 4 the videotape deposition of Dr. Thomas A. Barbolt. 5 (Short break.) 6 THE VIDEOGRAPHER: We're now back on 7 the video record. It's 10:52. 8 This begins Volume 2, Tape 2 of the 9 videotape deposition of Dr. Thomas A. Barbolt. 10 MR. THOMAS: There was a question 11 pending. Do you want him to answer it? 12 MR. THORNBURGH: I thought he did 13 answer it. 14 BY MR. THORNBURGH: 15 Q. Were you not finished answering my 16 question? 17 A. I don't think so. Could you repeat? 18 It's not on the... 19 MR. THOMAS: I don't think he 20 answered it. 21 The question appears at Line 63, 23. 22 BY MR. THORNBURGH: 23 Q. Did you personally conduct any 24 studies that had the primary endpoint of looking at 25 degradation in your animal studies?</p>

## Confidential - Subject to Protective Order

Page 367	Page 369
<p>1                   MR. THOMAS: Object to the form of 2 the question.</p> <p>3                   THE WITNESS: All implantation 4 studies that I have conducted -- and you have seen 5 my name on a number of them in the compilation of 6 data that we provided looking at degradation of the 7 implant -- is part of every implantation study. So 8 the answer is yes.</p> <p>9                   BY MR. THORNBURGH:</p> <p>10                  Q. Did you do SEM EDX analysis?</p> <p>11                  A. No.</p> <p>12                  Q. Did you do FTIR analysis?</p> <p>13                  A. Is this on behalf of Ethicon or 14 personally?</p> <p>15                  Q. Did you personally?</p> <p>16                  A. No.</p> <p>17                  Q. Did you do melting point analysis?</p> <p>18                  MR. THOMAS: Object to the form of 19 the question.</p> <p>20                  THE WITNESS: No.</p> <p>21                  BY MR. THORNBURGH:</p> <p>22                  Q. So, clearly, the primary endpoint in 23 the studies that you conducted were not oxidation or 24 degradation studies, correct?</p> <p>25                  MR. THOMAS: Object to the form of</p>	<p>1                   MR. THOMAS: Object to the form of 2 the question.</p> <p>3                   THE WITNESS: I don't understand the 4 question. In what context?</p> <p>5                   BY MR. THORNBURGH:</p> <p>6                  Q. Do you recall being told -- do you -- 7 strike that.</p> <p>8                  Do you recall inquiring about whether 9 you should conduct animal studies with the primary 10 endpoint of degradation?</p> <p>11                  MR. THOMAS: Object to the form of 12 the question; scope.</p> <p>13                  THE WITNESS: Being told not to do 14 such studies?</p> <p>15                  BY MR. THORNBURGH:</p> <p>16                  Q. Yes.</p> <p>17                  A. No.</p> <p>18                  Q. Do you know who Dr. Ramshaw is?</p> <p>19                  A. Dr.?</p> <p>20                  Q. Ramshaw?</p> <p>21                  A. No, I do not.</p> <p>22                  Q. Bruce Ramshaw from the University of 23 Missouri?</p> <p>24                  A. I don't think we've met.</p> <p>25                  Q. My question was: Do you know of him?</p>
<p style="text-align: center;">Page 368</p> <p>1 the question.</p> <p>2                   THE WITNESS: They were not oxidation 3 studies, but they definitely were degradation 4 studies. That is a primary endpoint for any 5 implantation study of absorbable or non-absorbable 6 implants.</p> <p>7                   BY MR. THORNBURGH:</p> <p>8                  Q. Did you do SEM analysis?</p> <p>9                  MR. THOMAS: Object to the form of 10 the question.</p> <p>11                  THE WITNESS: No.</p> <p>12                  BY MR. THORNBURGH:</p> <p>13                  Q. How could you do a degradation study 14 without doing SEM analysis?</p> <p>15                  MR. THOMAS: Object to the form of 16 the question.</p> <p>17                  THE WITNESS: Well, the beauty -- the 18 beauty of an implantation study is that you can look 19 at the elements of an implant to determine whether 20 or not there is cracking, there's absorption, there 21 is surface effects. All that could be visualized 22 directly under the light microscope.</p> <p>23                  BY MR. THORNBURGH:</p> <p>24                  Q. In fact, you were told not to do 25 degradation studies, weren't you?</p>	<p style="text-align: center;">Page 370</p> <p>1                  A. No.</p> <p>2                  Q. I've handed what's been premarked as 3 Exhibit Number T-4012.</p> <p>4                  The ETH.MESH. number is 05588123.</p> <p>5                  Now, if you go to the last page of 6 this e-mail, which would be the first e-mail in this 7 e-mail string, you write to Dr. Thomas Divilio.</p> <p>8                  Do you know who Dr. Thomas Divilio 9 is?</p> <p>10                 A. Thomas Divilio.</p> <p>11                 Q. Divilio? Who's Dr. Thomas Divilio?</p> <p>12                 A. He was a medical director at Ethicon.</p> <p>13                 It doesn't look like I sent the 14 message. It looks like I was copied on it.</p> <p>15                 MR. THOMAS: He directed your 16 attention to the very end.</p> <p>17                 Oh, I see. Yes, I see what you mean.</p> <p>18                 THE WITNESS: I am looking at the 19 last e-mail message beginning on ETH.MESH.05588125.</p> <p>20                 BY MR. THORNBURGH:</p> <p>21                 Q. Yeah. Oddly, if you look at the 22 author of this e-mail, it appears to be you.</p> <p>23                 Hold on a second.</p> <p>24                 MR. THOMAS: Wait a minute.</p> <p>25                 MR. THORNBURGH: I'm sorry. Sorry.</p>

## Confidential - Subject to Protective Order

Page 371	Page 373
<p>1 Strike that. Strike that.</p> <p>2 MR. THOMAS: The author is Tom</p> <p>3 Divilio.</p> <p>4 MR. THORNBURGH: That's why I said</p> <p>5 "strike that".</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Well, let's do it this way. Do you</p> <p>8 recall being included in an e-mail, copied in an</p> <p>9 e-mail, from Dr. Thomas Divilio to John Gillespie</p> <p>10 where you were copied --</p> <p>11 MR. THOMAS: Object to form.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. -- as a recipient of the e-mail?</p> <p>14 MR. THOMAS: Object to the form of</p> <p>15 the question; scope.</p> <p>16 THE WITNESS: Well, I've never seen</p> <p>17 this e-mail chain before. I'd like to take a minute</p> <p>18 to go -- to read through it.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. Well, you clearly received it. You</p> <p>21 don't recall it. Is that what you're saying?</p> <p>22 MR. THOMAS: Object to the form of</p> <p>23 the question.</p> <p>24 THE WITNESS: I see that I'm copied</p> <p>25 on it. You asked me if I knew anything about it.</p>	<p>1 after ten years revealed no changes in material.</p> <p>2 That's not actually true, is it?</p> <p>3 MR. THOMAS: Object to the form of</p> <p>4 the question; scope.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. That statement that Ethicon had</p> <p>7 previously implanted Prolene suture into dogs, and</p> <p>8 explants after ten years revealed no changes in the</p> <p>9 material, is not a true statement, is it?</p> <p>10 MR. THOMAS: Object to form; scope.</p> <p>11 THE WITNESS: There were three</p> <p>12 elements, three important elements in that study.</p> <p>13 The key elements, as we've discussed</p> <p>14 earlier, were molecular weight and tensile strength.</p> <p>15 And in that seven-year dog study, which -- which is</p> <p>16 referenced as ten year here, there was no impact on</p> <p>17 molecular weight, nor tensile strength.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. There was surface cracks observed on</p> <p>20 the surface layer of the polypropylene in that</p> <p>21 study, correct?</p> <p>22 A. Surface changes were observed in some</p> <p>23 of the fibers in some of the dogs.</p> <p>24 Q. Are you telling the ladies and</p> <p>25 gentlemen of the jury that when the outer surface of</p>
Page 372	Page 374
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. We'll read the e-mail.</p> <p>3 It says from Dr. Divilio, John --</p> <p>4 MR. THOMAS: I think he wants to read</p> <p>5 the whole chain.</p> <p>6 MR. THORNBURGH: Okay. I mean, I am</p> <p>7 going to read it with him.</p> <p>8 THE WITNESS: Okay. If you want to</p> <p>9 lead it off, that's fine.</p> <p>10 BY MR. THORNBURGH:</p> <p>11 Q. It says: John, Bruce Ramshaw from</p> <p>12 the University of Missouri is challenging our</p> <p>13 perception of polypropylene --</p> <p>14 Polypropylene is the polymer in TVT,</p> <p>15 correct?</p> <p>16 A. Yes.</p> <p>17 Q. -- is challenging our perception of</p> <p>18 polypropylene as inert material after implantation.</p> <p>19 In a recent article, his group looked at explanted</p> <p>20 polypropylene from a Bard Composix mesh under EM and</p> <p>21 found that the surface of the fibers had been</p> <p>22 altered with respect to the pristine material, with</p> <p>23 evidence of blistering and increased surface</p> <p>24 roughness, possibly due to oxidation. We previously</p> <p>25 had implanted Prolene suture into dogs, and explants</p>	<p>1 the polypropylene fibers crack and peel away from</p> <p>2 the surface, that that is not degradation?</p> <p>3 MR. THOMAS: Object to the form of</p> <p>4 the question.</p> <p>5 THE WITNESS: I am telling listeners</p> <p>6 that the key endpoint of adverse effects of</p> <p>7 degradation are molecular weight and tensile</p> <p>8 strength, both quantitative measures, not subjective</p> <p>9 assessments of surface changes, but quantitative</p> <p>10 measures that hold great weight and suggest that</p> <p>11 there's no degradation to the Prolene fiber in terms</p> <p>12 that are significant.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. Do you agree there's been studies</p> <p>15 conducted that show that when the polypropylene</p> <p>16 fiber surface or lose -- or fragments come off of</p> <p>17 the polypropylene surface as a result of</p> <p>18 degradation, that that increases the inflammatory</p> <p>19 response?</p> <p>20 MR. THOMAS: Object to the form of</p> <p>21 the question.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. You've seen those studies, haven't</p> <p>24 you?</p> <p>25 MR. THOMAS: Object to the form of</p>

## Confidential - Subject to Protective Order

Page 375	Page 377
<p>1 the question.</p> <p>2 THE WITNESS: I don't recall those</p> <p>3 studies. However, all of those studies I do</p> <p>4 recall -- and it's those 49 studies listed in these</p> <p>5 two folders -- do not suggest that there's</p> <p>6 degradation of the Prolene polypropylene fiber.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Do you agree on behalf of Ethicon</p> <p>9 that if that -- that if the surface layer is coming</p> <p>10 off and/or there are fragments that are being</p> <p>11 released from the polypropylene, that that would --</p> <p>12 could increase -- increase the inflammatory</p> <p>13 response?</p> <p>14 A. No.</p> <p>15 MR. THOMAS: Object to the form of</p> <p>16 the question.</p> <p>17 THE WITNESS: No, because every bit</p> <p>18 of data that Ethicon has -- and there are 49 studies</p> <p>19 listed here -- suggest that if anything, the tissue</p> <p>20 reaction after long-term implantation of Prolene</p> <p>21 polypropylene fibers diminishes. It does not</p> <p>22 increase.</p> <p>23 And this is reflected by FDA in the</p> <p>24 FDA reclassification document, where they discuss</p> <p>25 what's known about Prolene suture and that, in fact,</p>	<p>1 in TVT does not degrade as a result of tissue</p> <p>2 enzymes is a study conducted by Postlethwait, right?</p> <p>3 You recall this study, don't you?</p> <p>4 MR. THOMAS: Which one are we talking</p> <p>5 about?</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Long-term comparative study of</p> <p>8 non-absorbable sutures by Dr. Postlethwait from 1969</p> <p>9 ETH.MESH. Number 10575759.</p> <p>10 MR. THOMAS: Excuse me. Do you want</p> <p>11 to mark one of those for the record?</p> <p>12 MR. THORNBURGH: Yes. Yes, I do.</p> <p>13 THE WITNESS: Did you say 59?</p> <p>14 MR. THOMAS: Wait a minute. He's</p> <p>15 going to mark it for you.</p> <p>16 MR. THORNBURGH: I am going to give</p> <p>17 you a copy so you have it.</p> <p>18 THE WITNESS: I have a copy here.</p> <p>19 It's Tab --</p> <p>20 MR. THORNBURGH: I am going to mark</p> <p>21 this one, anyway.</p> <p>22 I'm sorry, Dave.</p> <p>23 MR. THOMAS: Can I have one, please?</p> <p>24 MR. THORNBURGH: Yep.</p> <p>25 MR. THOMAS: What exhibit number is</p>
Page 376	Page 378
<p>1 that it's not absorbable and doesn't degrade to a</p> <p>2 significant effect.</p> <p>3 MR. THORNBURGH: Move to strike.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. It's a yes or no question, and then</p> <p>6 you can explain it if you want to.</p> <p>7 My question to you was: Is it</p> <p>8 Ethicon's position --</p> <p>9 MR. THOMAS: Excuse me. Just so you</p> <p>10 know, he said "no" and then explained. That's</p> <p>11 exactly what he did.</p> <p>12 MR. THORNBURGH: All right. Move to</p> <p>13 strike everything after no.</p> <p>14 It's going to be a long day if --</p> <p>15 counsel --</p> <p>16 BY MR. THORNBURGH:</p> <p>17 Q. Counsel, obviously, is going to have</p> <p>18 an opportunity to ask you questions. But I asked a</p> <p>19 yes or no question. I expect a yes or no answer.</p> <p>20 MR. THOMAS: He knows the rules, Dan.</p> <p>21 This is his sixth day.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. Doctor, in fact, one of the pieces of</p> <p>24 evidence that you included in your list of documents</p> <p>25 related to the statement by Ethicon that the Prolene</p>	<p>1 that?</p> <p>2 THE WITNESS: 2251.</p> <p>3 MR. THOMAS: 2251. Thank you.</p> <p>4 (Document marked for identification</p> <p>5 as Exhibit T-2251.)</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Now, Dr. Postlethwait from Duke</p> <p>8 University Medical Center in 1969, in a study</p> <p>9 supported by Ethicon, looked at degradation of</p> <p>10 polypropylene fibers or sutures.</p> <p>11 And if you turn to Page 895, and if</p> <p>12 you go to the -- first figure six at the bottom, it</p> <p>13 shows that M -- this is a hard copy to read, but in</p> <p>14 Picture M or Image M, polypropylene -- apparently,</p> <p>15 Image M is showing polypropylene with some fragments</p> <p>16 after 18 months.</p> <p>17 Same at two years. Higher power of</p> <p>18 edges of polypropylene suture and fragments.</p> <p>19 Now, if we turn to ETH.MESH.0175763,</p> <p>20 the last full paragraph on the left-hand column</p> <p>21 discusses Dr. Postlethwait's findings with respect to</p> <p>22 the polypropylene sutures which were apparently</p> <p>23 provided to him by Ethicon.</p> <p>24 MR. THOMAS: Whoa, whoa, whoa.</p> <p>25 Object to the form of the question. Where can you</p>

## Confidential - Subject to Protective Order

Page 379	Page 381
<p>1 substantiate that?</p> <p>2 MR. THORNBURGH: Well, it's provided 3 in part by Ethicon.</p> <p>4 MR. THOMAS: Nowhere in this article 5 does it say these are Ethicon sutures, unless you 6 can show me otherwise.</p> <p>7 MR. THORNBURGH: Are you representing 8 that they're not?</p> <p>9 MR. THOMAS: I am not, but I think 10 it's another thing to say that they were.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Well, certainly, Ethicon is 13 supporting this study, right?</p> <p>14 And this study is regarding 15 polypropylene degradation. And Dr. Postlethwait 16 writes that in 18 months and more -- at 18 months, 17 and even more often at two years, an occasional 18 suture has started to fragment. The entire suture 19 does not break up, but small portions appear to 20 separate from one edge.</p> <p>21 Each minute fragment, although 22 remaining in the vicinity, stimulates its own 23 cellular reaction. This, of course, increases the 24 grade of the tissue reaction so that it exceeds 25 nylon.</p>	<p>1 MR. THOMAS: He already has.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Now, if we go back to Exhibit 4 Number 4012: Bruce, the e-mail from Dr. Divilio to 5 John Gillespie.</p> <p>6 Who's John Gillespie?</p> <p>7 A. He worked in the Gynecare group, 8 so...</p> <p>9 Q. And you were cc'd, weren't you?</p> <p>10 A. Yes.</p> <p>11 Q. And the subject of this e-mail is how 12 inert is polypropylene, right?</p> <p>13 A. Yes.</p> <p>14 Q. Okay. Now, Dr. Divilio writes to 15 John: Bruce Ramshaw from the University of Missouri 16 is challenging our perception of polypropylene as an 17 inert material after implantation.</p> <p>18 Do you recall other experts in the 19 field who have evaluated and studied the 20 potentiation of polypropylene degradation having a 21 different position than Ethicon has currently in 22 this litigation?</p> <p>23 MR. THOMAS: Object to the form of 24 the question.</p> <p>25 THE WITNESS: Yeah. You'll have</p>
<p>1 So Dr. Postlethwait, who personally 2 studied this issue with polypropylene, found that 3 fragments, no matter how minute, increases the grade 4 of tissue reaction.</p> <p>5 Do you disagree with Dr. 6 Postlethwait's statement here?</p> <p>7 MR. THOMAS: Object to the form of 8 the question.</p> <p>9 THE WITNESS: He says: This, of 10 course, increases the grade of the tissue reaction 11 so that it exceeds nylon.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. It increases the tissue reaction, 14 correct?</p> <p>15 MR. THOMAS: Object to the form of 16 the question.</p> <p>17 THE WITNESS: To exceed nylon, which 18 I know has virtually little reaction.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. It increases the tissue reaction, 21 correct?</p> <p>22 A. Yes.</p> <p>23 Q. You would agree with that statement, 24 wouldn't you?</p> <p>25 A. Yes.</p>	<p>1 to -- are we talking about this memo, or is it a 2 standalone question?</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. Standalone question first.</p> <p>5 A. And that would be?</p> <p>6 Q. Experts in the field who study 7 degradation of polypropylene have a different 8 position than Ethicon is taking through you in this 9 litigation, correct?</p> <p>10 MR. THOMAS: Object to the form of 11 the question.</p> <p>12 THE WITNESS: The position that 13 Ethicon is taking, there's no impact on molecular 14 weight or tensile strength. I don't know of other 15 investigators that demonstrate with Prolene 16 polypropylene fiber a loss of molecular weight and 17 loss in tensile strength.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. Are you saying Ethicon that is not 20 taking the position that the surface layer of the 21 polypropylene fibers does, in fact, crack and can 22 peel away from the surface of the fibers?</p> <p>23 MR. THOMAS: Object to the form of 24 the question.</p> <p>25 THE WITNESS: We can look at the</p>

## Confidential - Subject to Protective Order

Page 383	Page 385
<p>1 details of the seven-year dog study which do show 2 surface changes in some of the fibers from some of 3 the dogs.</p> <p>4 MR. THOMAS: Excuse me --</p> <p>5 THE WITNESS: In the absence --</p> <p>6 MR. THORNBURGH: I thought he was 7 done, Dave.</p> <p>8 THE WITNESS: In the absence of 9 impact of molecular weight or tensile strength.</p> <p>10 BY MR. THORNBURGH:</p> <p>11 Q. Right. But you agree Ethicon -- as a 12 spokesperson for Ethicon, that the surface of the 13 polymer fibers can, in fact, crack and peel away 14 into the surrounding tissue of either the patient or 15 an animal?</p> <p>16 MR. THOMAS: Object to the form of 17 the question.</p> <p>18 THE WITNESS: I recall observations 19 of surface cracking in the seven-year dog study, but 20 I don't recall any discussion of surface peeling 21 away and -- to your -- to your detail.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. Well, we'll look -- we'll look at 24 some other studies here in a moment. But let me at 25 least understand Ethicon's position with respect to</p>	<p>1 question.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Do you agree as a spokesperson for 4 Ethicon that the polymer fibers can crack?</p> <p>5 MR. THOMAS: Object to the form of 6 the question.</p> <p>7 THE WITNESS: I think I just answered 8 that --</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Yes or no?</p> <p>11 A. I think I just answered that those 12 observations are in the seven-year dog study. So we 13 can look at those details if you care to.</p> <p>14 Q. So you would agree as a 15 spokesperson -- as a 30(b)(6) person for Ethicon 16 that the surface of polymer fibers, including the 17 polypropylene fibers in TVT, can crack?</p> <p>18 MR. THOMAS: Object to the form of 19 the question.</p> <p>20 THE WITNESS: Yes.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. And you would agree that if fragments 23 come off of the polypropylene fibers, including the 24 polypropylene fibers in TVT, that that could 25 increase or that could cause each minute fragment to</p>
Page 384	Page 386
<p>1 surface cracking.</p> <p>2 Is it Ethicon's position that the 3 polymer fiber surface can, in fact, crack?</p> <p>4 MR. THOMAS: Object to the form of 5 the question.</p> <p>6 THE WITNESS: Such observations were 7 made in the seven-year dog study.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. So it's Ethicon's position that the 10 polymer fibers can crack, right?</p> <p>11 MR. THOMAS: Object to the form of 12 the question.</p> <p>13 THE WITNESS: Again, the seven-year 14 dog study talks about surface changes. The etiology 15 of those changes or their significance are not 16 discussed in detail other than to follow up on that 17 observation and look at more important quantitative 18 parameters, like molecular weight and tensile 19 strength, and those two parameters were not 20 adversely affected.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. I know you want to try to frame the 23 position most favorable to Ethicon, but listen to my 24 question. Okay?</p> <p>25 MR. THOMAS: Please don't load the</p>	<p>1 stimulate its own cellular reaction. You would 2 agree with that, right?</p> <p>3 MR. THOMAS: Object to the form of 4 the question.</p> <p>5 THE WITNESS: No. There's no 6 evidence that there's -- in the seven-year dog study 7 that material that is coming from the surface other 8 than showing surface changes in the form of -- of 9 cracking.</p> <p>10 I should add that in the Prolene 11 suture NDA, observations of polypropylene fragments 12 were observed and reported to the FDA. And they 13 were felt to be related to this swaging process or 14 the cutting of suture strands to length, and a 15 fragment would be attached to the suture and get 16 inadvertently implanted.</p> <p>17 I should also point out in the 18 Postlethwait study that we just discussed, 19 Exhibit 2251, ETH.MESH.10575764, at the top of the 20 page, right after the discussion section where it 21 says that there are fragments which increase the 22 tissue reaction -- at the top of the page, it says: 23 In correspondence with the 24 manufacturer, it was learned that these sutures were 25 the first extruded from the first shipment of</p>

## Confidential - Subject to Protective Order

Page 387	Page 389
<p>1 polypropylene. Subsequently, changes have been made  2 to improve the extrusion process. It is believed  3 that fragmentation will not occur with the presently  4 available sutures. Additional long-term studies  5 have been initiated, however.</p> <p>6 And then, parenthetically, the  7 polypropylene did retain tensile strength.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. It still increased the inflammatory  10 response, didn't they?</p> <p>11 MR. THOMAS: Object to the form of  12 the question.</p> <p>13 THE WITNESS: An individual fragment  14 adjacent to a strand of polypropylene -- Prolene  15 polypropylene fiber will add to the inflammatory  16 reaction just like there is an inflammatory reaction  17 to the suture fiber itself.</p> <p>18 That's wholly different than what  19 you're talking about when you suggest that there's  20 surface cracking and sloughing of the surface,  21 releasing many particles.</p> <p>22 If that's the case, that observation  23 would have been observed -- that observation of  24 increased tissue reaction would have been observed  25 in the 49 studies that we've compiled to demonstrate</p>	<p>1 products.</p> <p>2 Q. Don't you think surgeons should know  3 that the -- that the surface layer of the TTV mesh,  4 a device that's being implanted permanently in  5 women's pelvises -- don't you think they should know  6 and be made aware that, in fact, the tissue enzymes  7 can cause the surface layer of the TTV to crack?</p> <p>8 MR. THOMAS: Object to the form of  9 the question; scope.</p> <p>10 THE WITNESS: To the first part of  11 your question, no, I don't think they care...if,  12 there's no impact on molecular weight and there's no  13 increase -- there's no decrease in tensile strength.</p> <p>14 And all the tissue reaction studies show a very  15 minimal tissue reaction and, in fact, a diminution  16 of that reaction over time.</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. You don't think physicians should be  19 made aware of the potential of degradation of the --  20 or surface cracking of the polymer fibers that's  21 being used as a permanent implant in women's  22 pelvises? That's what you're telling the ladies and  23 gentlemen of this jury?</p> <p>24 MR. THOMAS: Excuse me. Object to  25 the form of the question; scope.</p>
<p style="text-align: center;">Page 388</p> <p>1 that, in fact, that that does not occur; and, in  2 fact, there's a diminution of the tissue reaction  3 over time in many cases from Ethicon's data and as  4 called out by FDA in the reclassification.</p> <p>5 MR. THORNBURGH: Move to strike.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. We're going to be here a long day if  8 you keep on going on this platform and speaking when  9 there's not even a question pending.</p> <p>10 MR. THOMAS: Please don't lecture the  11 witness.</p> <p>12 MR. THORNBURGH: Move to strike.</p> <p>13 MR. THOMAS: Please don't lecture the  14 witness.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. Dr. Barbolt, where in this section in  17 the IFU that talks about degradation does Ethicon  18 warn physicians that the surface layer of the  19 Prolene in the TTV mesh can crack?</p> <p>20 MR. THOMAS: Object to the form of  21 the question; scope.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. It's not in there, is it?</p> <p>24 A. This is an IFU intended to provide  25 the most useful information to surgeons who use our</p>	<p style="text-align: center;">Page 390</p> <p>1 THE WITNESS: Could you repeat the  2 question?</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. Yeah. Let me say it this way.</p> <p>5 Ethicon chose not to include  6 information in this section from animal studies that  7 showed that the -- that the Prolene and  8 polypropylene surface area can crack, right?</p> <p>9 MR. THOMAS: Object to the form of  10 the question.</p> <p>11 THE WITNESS: I believe that Ethicon  12 did not feel that that was important information to  13 put in the instructions for use.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. And because that information wasn't  16 put into the -- and because Ethicon chose not to put  17 that information in the IFU, that information,  18 therefore, did not make it to the physicians?</p> <p>19 MR. THOMAS: Object to the form of  20 the question; scope.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. Correct?</p> <p>23 A. That level of detail was not provided  24 in the package insert.</p> <p>25 MR. THORNBURGH: I have to use the</p>

## Confidential - Subject to Protective Order

Page 391	Page 393
<p>1 restroom.</p> <p>2 THE VIDEOGRAPHER: Off the video</p> <p>3 record. The time is 11:18.</p> <p>4 (Short break.)</p> <p>5 THE VIDEOGRAPHER: Back on the video</p> <p>6 record. It's 11:24.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Now, Doctor, you made a statement a</p> <p>9 moment ago regarding the Postlethwait publication</p> <p>10 study, that changes were made by the manufacturers</p> <p>11 subsequent to this study, correct?</p> <p>12 A. Yes, as I read from the publication.</p> <p>13 Q. And this study was 1969, right?</p> <p>14 A. Yes. A Prolene suture was just being</p> <p>15 released as a new product.</p> <p>16 Q. Okay. Now --</p> <p>17 MR. THORNBURGH: I'll go ahead and</p> <p>18 mark as exhibit -- Exhibit Number 2252...</p> <p>19 (Document marked for identification</p> <p>20 as Exhibit T-2252.)</p> <p>21 MR. THORNBURGH: ... the five-year</p> <p>22 data from the ten-year dog study.</p> <p>23 Mr. Thomas.</p> <p>24 MR. THOMAS: Can I have a copy,</p> <p>25 please?</p>	<p>1 the question; scope.</p> <p>2 THE WITNESS: I don't think oxidation</p> <p>3 was an issue that needed to be corrected.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. Well, surface cracking was, right?</p> <p>6 MR. THOMAS: Object to the form of</p> <p>7 the question.</p> <p>8 THE WITNESS: What we were discussing</p> <p>9 before was fragmentation, and I see that as totally</p> <p>10 different than observations of surface cracking.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Okay.</p> <p>13 A. Fragmentation is a growth fragment of</p> <p>14 the suture. Surface cracking is a very subtle</p> <p>15 observation of what looks like surface cracking.</p> <p>16 Q. You agree with me that by 1985,</p> <p>17 Ethicon would have added antioxidants, like</p> <p>18 Santonox R and Procol or Lubrol, to their resin</p> <p>19 during the manufacturing process to prevent</p> <p>20 oxidation, right?</p> <p>21 A. Antioxidant package was added at the</p> <p>22 very beginning of the development of the Prolene</p> <p>23 suture and has remained basically unchanged.</p> <p>24 Q. And as we discussed earlier, you</p> <p>25 agree that the antioxidants, including Santonox R</p>
<p style="text-align: center;">Page 392</p> <p>1 MR. THORNBURGH: Yes.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. I'm sorry. Hold on. Yeah.</p> <p>4 Okay. Now, this document is the --</p> <p>5 is the five-year data from the ten-year dog study</p> <p>6 that we've been alluding to all along, right?</p> <p>7 A. Yes.</p> <p>8 Q. And this is the study that you</p> <p>9 testified showed cracks in the surface layer, outer</p> <p>10 surface layer, of the polypropylene sutures,</p> <p>11 correct?</p> <p>12 MR. THOMAS: Object to the form of</p> <p>13 the question.</p> <p>14 THE WITNESS: As indicated in the</p> <p>15 reports, right.</p> <p>16 BY MR. THORNBURGH:</p> <p>17 Q. And this study was -- began in 1985.</p> <p>18 Do you see that?</p> <p>19 A. Yes.</p> <p>20 Q. Okay. That -- that's like 16 years</p> <p>21 after the Postlethwait publication. And presumably</p> <p>22 by this point, the manufacturers, including Ethicon,</p> <p>23 had made the necessary changes to their Prolene</p> <p>24 suture to prevent oxidation, right?</p> <p>25 MR. THOMAS: Object to the form of</p>	<p style="text-align: center;">Page 394</p> <p>1 and Lubrol and Procol, can leach out of the mesh or</p> <p>2 suture fibers into the surrounding tissue of the</p> <p>3 host, right?</p> <p>4 MR. THOMAS: Object to the form of</p> <p>5 the question.</p> <p>6 THE WITNESS: Yes. I think there's</p> <p>7 evidence of leaching.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. All right. And in this study,</p> <p>10 despite the antioxidants being added to the Prolene</p> <p>11 sutures, the surface layer or outer surface of the</p> <p>12 polypropylene fibers cracked, correct?</p> <p>13 MR. THOMAS: Object to the form of</p> <p>14 the question.</p> <p>15 THE WITNESS: I want to look at the</p> <p>16 details of the report and...</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. Did you see this before today?</p> <p>19 A. Yes.</p> <p>20 Q. Okay.</p> <p>21 A. I've not memorized every paragraph.</p> <p>22 Q. Let's go through it together.</p> <p>23 MR. THOMAS: Well, wait. There was a</p> <p>24 question pending. Do you want to withdraw it and</p> <p>25 ask another?</p>

## Confidential - Subject to Protective Order

Page 395	Page 397
<p>1 BY MR. THORNBURGH:  2 Q. I think the question was...  3 MR. THOMAS: Your question at 91, 11.  4 BY MR. THORNBURGH:  5 Q. In this study, despite the  6 antioxidants being added to the Prolene sutures, the  7 surface there or outer surface of the polypropylene  8 fibers cracked, correct?  9 MR. THOMAS: He never answered that  10 question.  11 THE WITNESS: Yes, and I want to take  12 a look at the report so I can recall just what was  13 written, because I am trying to reflect the report.  14 BY MR. THORNBURGH:  15 Q. Well, we can go through it together  16 to help you answer that question.  17 A. I am looking at the bottom of  18 ETH.MESH.11336475, and looking at the conclusions,  19 and then it says out of seven Prolene explants, two  20 revealed cracking.  21 Q. So the answer to my question is yes.  22 MR. THOMAS: Object to the form of  23 the question.  24 THE WITNESS: This is a complete  25 answer.</p>	<p>1 and discussion section, on Page 2 of Exhibit  2 Number 2252, which is the five-year data, the  3 investigator and author of this report writes that:  4 A table is included in this report which summarizes  5 the light microscopical observations. It can be  6 said unequivocally that the cracking that was seen  7 in any of the sutures was not introduced by sample  8 preparation, i.e., drying.  9 If cracking was observed on a dry  10 suture in the light microscope or in the SEM --  11 scanning electron microscopy -- the same cracking is  12 also found on the same suture after it had been in  13 body fluids and then in sterile water without ever  14 having dried.  15 So this reporter, the researcher at  16 Ethicon, wrote that it can be said unequivocally  17 that the cracks were not caused by the introduction  18 by sample preparation, right?  19 A. Yes. That's what it says.  20 Q. And if we go to -- on the same page,  21 if we go to the third section regarding SEM,  22 scanning electronic microscopy, of PVDF explants, it  23 was found that no cracking or abrasions were found  24 on the PVDF sutures, correct?  25 A. Yes. At this interval, that's</p>
Page 396	Page 398
<p>1 BY MR. THORNBURGH:  2 Q. Despite the antioxidants being added  3 to the Prolene sutures, in two of the Prolene  4 sutures in the study, the surface layer was cracked,  5 correct?  6 MR. THOMAS: Object to the form of  7 the question.  8 THE WITNESS: Two revealed cracking,  9 yes.  10 BY MR. THORNBURGH:  11 Q. And you aren't suggesting to the  12 ladies and gentlemen of the jury that those cracks  13 were anything other than the Prolene polypropylene,  14 are you?  15 A. No, I am not suggesting that, and  16 that's not reflected in this report.  17 Q. You would agree that the surface  18 layer that's cracked here is the polypropylene  19 surface layer, correct?  20 MR. THOMAS: Object to the form of  21 the question.  22 THE WITNESS: In reading the report,  23 it says that -- that's what I would conclude.  24 BY MR. THORNBURGH:  25 Q. And if we look back up at the results</p>	<p>1 correct.  2 Q. But at this five-year interval, the  3 scanning electron microscopy of Prolene explants on  4 explants from dogs 2012 and 2018, a few cracked  5 areas were observed. Both of these sutures came  6 from Site 4. Do you see that?  7 A. Yes.  8 Q. And the conclusion that we discussed  9 a moment ago was that after five years in vivo, the  10 PVDF -- do you know what PVDF is?  11 A. Yes.  12 Q. That's a more stable, more inert  13 fiber, isn't it?  14 MR. THOMAS: Object to the form of  15 the question.  16 BY MR. THORNBURGH:  17 Q. It's a polymer?  18 MR. THOMAS: Object to the form of  19 the question; scope.  20 THE WITNESS: It is a very resistant  21 to degradation kind of polymer and resistant to  22 mechanical damage.  23 BY MR. THORNBURGH:  24 Q. More so than Prolene, correct?  25 MR. THOMAS: Object to the form of</p>

## Confidential - Subject to Protective Order

Page 399	Page 401
<p>1 the question; scope.</p> <p>2 THE WITNESS: Yes.</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. And the conclusion was that after</p> <p>5 five years in vivo, the PVDF 5-0 suture was the only</p> <p>6 explanted material from the five dogs which did not</p> <p>7 show any surface damage due to degradation. Out of</p> <p>8 seven Prolene explants, two revealed cracking.</p> <p>9 So in this study, at the five year --</p> <p>10 the two-year data in this study didn't show evidence</p> <p>11 of cracking, but the five-year data, the long-term</p> <p>12 data, showed evidence of cracking of the Prolene</p> <p>13 sutures, correct?</p> <p>14 A. Yes. That's what it says.</p> <p>15 Q. And here is the table that was</p> <p>16 referenced by the study investigator which shows</p> <p>17 cracking on the Prolene fibers. Do you see that?</p> <p>18 A. Yes.</p> <p>19 Q. Finally, on ETH.MESH. number ending</p> <p>20 in 6483, there are -- there is SEM images, though</p> <p>21 they're black and white, they show the cracking that</p> <p>22 was observed in the five-year data. Do you see</p> <p>23 that?</p> <p>24 MR. THOMAS: What page are you on?</p> <p>25 I'm sorry.</p>	<p>1 THE WITNESS: None shown.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Which would be consistent with your</p> <p>4 testimony that the PVDF polymer is a more inert</p> <p>5 polymer than Prolene polypropylene?</p> <p>6 MR. THOMAS: Object to the form of</p> <p>7 the question; scope.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. Right?</p> <p>10 A. Yes.</p> <p>11 Q. Finally, if we go to the conclusion</p> <p>12 page on the five-year data, ETH.MESH.11336487, the</p> <p>13 conclusion here is that after five years in vivo,</p> <p>14 the PVDF 5-0 suture was the only explanted material</p> <p>15 from five dogs which did not show any surface damage</p> <p>16 due to degradation.</p> <p>17 So here the study author is</p> <p>18 discussing degradation, right?</p> <p>19 MR. THOMAS: Object to the form of</p> <p>20 the question.</p> <p>21 THE WITNESS: Yes. It's as stated.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. And included in his analysis of</p> <p>24 degradation is his observation that the Prolene</p> <p>25 explants did show signs of degradation as a result</p>
<p style="text-align: center;">Page 400</p> <p>1 MR. THORNBURGH: ETH.MESH.6483.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. This is an upside down page, for some</p> <p>4 reason, but --</p> <p>5 A. Yes. I see it.</p> <p>6 Q. -- if you see Figure 6, Prolene</p> <p>7 explants, you can see the cracking, even in this</p> <p>8 poor copy image, of the Prolene polypropylene that</p> <p>9 was cracked on the surface of the sutures, right?</p> <p>10 MR. THOMAS: Object to the form of</p> <p>11 the question.</p> <p>12 THE WITNESS: Yes. I see that.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. Figure 4, ETH.MESH.6481, we have the</p> <p>15 PVDF explants, which you testified was a more inert</p> <p>16 polymer than polypropylene and Prolene</p> <p>17 polypropylene, which shows, really, fibers that look</p> <p>18 almost pristine, right?</p> <p>19 MR. THOMAS: Object to the form of</p> <p>20 the question.</p> <p>21 THE WITNESS: Yes.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. No crack, no surface cracking on the</p> <p>24 PVDF?</p> <p>25 MR. THOMAS: Same objection.</p>	<p style="text-align: center;">Page 402</p> <p>1 of the surface cracking on the outer layer of the</p> <p>2 polymer, correct?</p> <p>3 A. As reported.</p> <p>4 Q. Correct? Yes?</p> <p>5 A. Yes.</p> <p>6 Q. Now, this study and the findings in</p> <p>7 the study showing that the polypropylene can crack</p> <p>8 on the surface of the Prolene sutures was conducted</p> <p>9 nine -- approximately nine -- eight or nine years</p> <p>10 prior to the marketing of TVT, correct?</p> <p>11 A. Yes. August 10, 1990 is the date of</p> <p>12 the report.</p> <p>13 Q. And prior to Ethicon's claim in the</p> <p>14 1999 label that the material is not absorbed, nor is</p> <p>15 it subject to degradation or weakening by the action</p> <p>16 of tissue enzymes, correct?</p> <p>17 A. One cannot look at this -- this</p> <p>18 observation.</p> <p>19 Q. Yes or no, sir.</p> <p>20 A. I can't give a "yes" or "no" answer.</p> <p>21 Q. It's a really easy question.</p> <p>22 A. No, it's not.</p> <p>23 Q. The study -- the 1990 study was</p> <p>24 conducted nine years before the 1990 label which</p> <p>25 included the claim that the material is not</p>

## Confidential - Subject to Protective Order

Page 403	Page 405
<p>1 absorbed, nor is it subject to degradation or 2 weakening by action of tissue enzymes, correct? 3 MR. THOMAS: He's just asking you now 4 about the date, Tom, nothing more. 5 THE WITNESS: The date is August 10, 6 1990. 7 BY MR. THORNBURGH: 8 Q. Nine years prior to this claim in the 9 IFU, correct? 10 MR. THOMAS: Object to the form of 11 the question. 12 THE WITNESS: Yes. 13 MR. THORNBURGH: Let's go ahead and 14 mark the seven-year data. 15 (Document marked for identification 16 as Exhibit T-2253.) 17 BY MR. THORNBURGH: 18 Q. I marked the seven-year data 19 ETH.MESH.11336034 as Exhibit 2253. 20 Doctor, you've had an opportunity 21 prior to coming into this room for your deposition 22 to review the seven-year data for the ten-year 23 Prolene dog study, correct? 24 A. Yes. 25 Q. And the seven-year data --</p>	<p>1 is not absorbed, nor is it subject to degradation or 2 weakening by action of tissue enzymes. Correct? 3 A. Yes. 4 Q. And additional studies were performed 5 on the Prolene sutures at this seven-year interval, 6 correct? 7 For example, IR microscopy was used 8 to examine cracked areas in Ethilon, Novofil, and 9 Prolene explants. And the conclusion written here 10 or the findings summarized here is that the IR 11 spectra obtained for cracked Prolene specimens, 12 Figure A, showed possible evidence of slight 13 oxidation with a broadened weak absorbance at about 14 the 1560 range. Do you see that? 15 MR. THOMAS: 1650 range. 16 BY MR. THORNBURGH: 17 Q. Yeah, 1650 range. 18 A. Yes. 19 Q. You see that, right? 20 A. Yes. 21 Q. So not only were -- did the sutures 22 show evidence of surface cracking, but the IR 23 spectra also showed that there was evidence of 24 oxidation? 25 MR. THOMAS: Object to the form of</p>
<p style="text-align: center;">Page 404</p> <p>1 MR. THOMAS: Just -- 2 MR. THORNBURGH: Sorry? 3 MR. THOMAS: There's additional data 4 reported at seven years. This is not the totality 5 of the data. I wanted to make sure that you weren't 6 representing that to be the totality of the data. 7 MR. THORNBURGH: Well, that's -- in 8 the report. This is the report. 9 MR. THOMAS: It's not the totality of 10 the data. There's seven-year data that's also been 11 produced to you. 12 MR. THORNBURGH: Well, I understand 13 that. I understand that. We're going to talk about 14 this report currently, and if there's a need to, 15 I'll go to the other -- the other additional data. 16 I don't know that there's a need to do that, but 17 we'll get there, Dave. Don't worry. 18 And if I don't cover something that 19 you think is important, Dave, you'll have a chance 20 to make those representations to the jury during 21 your cross-examination or direct examination. 22 BY MR. THORNBURGH: 23 Q. Dr. Barbolt, October 15, 1992, that 24 again is several years prior to the claim that was 25 made in the IFU that we looked at that the material</p>	<p style="text-align: center;">Page 406</p> <p>1 the question. 2 Read the complete sentence, please. 3 MR. THORNBURGH: Dave, you'll have a 4 chance to make representations. I am showing the 5 jury IR spectra obtained for cracked Prolene 6 specimen showed possible evidence of slight 7 oxidation. 8 MR. THOMAS: That is a proper 9 reading -- 10 MR. THORNBURGH: Move to strike 11 your -- move to strike your -- Dave, if you're going 12 to try to make these speaking objections and 13 suggesting answers to the witness, then I am going 14 to call the Judge. 15 MR. THOMAS: You call the Judge -- 16 MR. THORNBURGH: Okay? 17 MR. THOMAS: -- because you are 18 representing this to be something else. 19 MR. THORNBURGH: Because speaking 20 objections -- because speaking objections are 21 inappropriate. The question remains especially when 22 they suggest answers -- okay? 23 MR. THOMAS: I certainly know the 24 rules, Dan. I certainly know the rules. Thank you. 25 Let's move on.</p>

## Confidential - Subject to Protective Order

Page 407	Page 409
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. IR spectra showed possible evidence 3 of slight oxidation, correct?</p> <p>4 A. Yes.</p> <p>5 Q. Okay. Now, there's also an 6 observation regarding the other Ethilon and Novofil, 7 which differed from uncracked areas. And the 8 conclusion was, expected IR absorbances for 9 oxidation would be masked by strong carbonyl 10 absorbances normally observed in these sutures.</p> <p>11 So there's a discussion here that -- 12 of the -- what would be expected to be seen could be 13 masked by strong carbonyl absorbances. Do you see 14 that?</p> <p>15 MR. THOMAS: Object to the form of 16 the question.</p> <p>17 THE WITNESS: Yes.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. And at the seven-year data, Ethicon's 20 investigator found degradation in Prolene is still 21 increasing in PVDF -- even though a few cracks were 22 found, is still by far the most surface resistant 23 in-house made suture in terms of cracking.</p> <p>24 That's the findings by Ethicon's 25 investigator, right?</p>	<p>1 BY MR. THORNBURGH:</p> <p>2 Q. And that's Ethicon's position as 3 you -- as the spokesperson for Ethicon, it's 4 Ethicon's position that degradation, surface 5 degradation, can occur, correct?</p> <p>6 MR. THOMAS: Object to the form of 7 the question.</p> <p>8 THE WITNESS: Yes.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. And this was known well in advance of 11 this statement that the material is not absorbed, 12 nor is it subject to degradation, correct?</p> <p>13 A. Yes. This is from 1992.</p> <p>14 MR. THORNBURGH: Okay. Lunch break.</p> <p>15 THE VIDEOGRAPHER: We're now going 16 off the video record. It's 11:48.</p> <p>17 (Lunch break.)</p> <p>18 THE VIDEOGRAPHER: We're back on the 19 video record. It's now 12:43.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. Now, Doctor, I'd like to turn your 22 attention back to the e-mail that we began to 23 discuss earlier in your deposition, Exhibit 24 Number T 4012.</p> <p>25 (Whereupon, a discussion was held off</p>
<p style="text-align: center;">Page 408</p> <p>1 A. Yes.</p> <p>2 Q. An employee for Ethicon who actually 3 investigated degradation of Prolene sutures and came 4 to the conclusion that degradation is occurring in 5 Prolene, right?</p> <p>6 MR. THOMAS: Object to the form of 7 the question.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. Do you see that?</p> <p>10 A. Yes, I see that. Surface 11 degradation, and they're making a reference to 12 surface degradation. Yep. I see it.</p> <p>13 Q. So you agree as the person for 14 Ethicon who's looked at these studies that surface 15 degradation can occur on the Prolene polypropylene, 16 correct?</p> <p>17 A. That was a surface change observed in 18 this report and so reported.</p> <p>19 Q. And so you agree that surface 20 degradation can occur in the Prolene polypropylene 21 that's contained in the TVT meshes, correct?</p> <p>22 MR. THOMAS: Object to the form of 23 the question.</p> <p>24 THE WITNESS: That's the data in this 25 report reflecting the SEM parameters evaluated.</p>	<p style="text-align: center;">Page 410</p> <p>1 the record.)</p> <p>2 THE WITNESS: Okay.</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. Now, this e-mail --</p> <p>5 MR. THOMAS: Give me just a half a 6 second to get back on the same page.</p> <p>7 Thank you. I am ready.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. This e-mail is again from 10 Dr. Divilio, and you were copied on this e-mail, 11 right?</p> <p>12 A. Yes.</p> <p>13 Q. In 2007, correct?</p> <p>14 A. Yes.</p> <p>15 Q. And the e-mail says: Bruce Ramshaw 16 from the University of Missouri is challenging our 17 perception of polypropylene as an inert material 18 after implantation. In a recent article, his group 19 looked at explanted polypropylene from a Bard 20 Composix mesh under EM, electron microscopy, and 21 found that the surface of the fibers had been 22 altered with respect to the pristine material with 23 evidence of blistering and increased surface 24 roughness, possibly due to oxidation.</p> <p>25 Now, this is the same finding or</p>

## Confidential - Subject to Protective Order

Page 411	Page 413
<p>1 similar findings, at the very least, that were made 2 in the five-year and seven-year, ten-year dog study, 3 correct?</p> <p>4 MR. THOMAS: Object to the form of 5 the question.</p> <p>6 THE WITNESS: No. In that study, 7 there was descriptions like surface cracking. I 8 don't see that here.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Well, it says: The surface of the 11 fibers had been altered with respect to the pristine 12 material.</p> <p>13 That could include and would include 14 surface cracking, wouldn't it?</p> <p>15 MR. THOMAS: Object to the form of 16 the question.</p> <p>17 THE WITNESS: As I read forward, it 18 says -- and they define what they mean by alteration 19 by saying evidence of blistering and increased 20 surface roughness, possibly due to oxidation.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. Like surface cracking, sir, correct?</p> <p>23 MR. THOMAS: Object to the form of 24 the question.</p> <p>25 THE WITNESS: I see that the words</p>	<p>1 no changes were in molecular weight and tensile 2 strength. So they might have been in this memo 3 making reference to the more important quantitative 4 parameters like molecular weight and tensile 5 strength.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Well, Dan Burkley found in the 8 seven-year data that there was degradation in the 9 Prolene, right?</p> <p>10 MR. THOMAS: Object to the form of 11 the question.</p> <p>12 THE WITNESS: That's in the report. 13 That's an observation. That's a component of the 14 parameters investigated in this study.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. The statement made by Dr. Divilio 17 that we had previously implanted Prolene suture into 18 dogs, and explants after ten years revealed no 19 changes in the material, is not a completely true 20 statement, is it?</p> <p>21 MR. THOMAS: Object to the form of 22 the question.</p> <p>23 THE WITNESS: I don't know what he 24 meant by that statement. I can't speak for him.</p> <p>25 BY MR. THORNBURGH:</p>
<p style="text-align: center;">Page 412</p> <p>1 are different.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Nevertheless, it goes on to write: 4 We previously had implanted Prolene suture into 5 dogs, and explants after ten years revealed no 6 changes in the material.</p> <p>7 That's not a true statement, is it?</p> <p>8 MR. THOMAS: Object to the form of 9 the question.</p> <p>10 THE WITNESS: Well, as we discussed, 11 there were some changes that were observed on the 12 surface.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. Surface degradation, correct?</p> <p>15 MR. THOMAS: Object to the form of 16 the question.</p> <p>17 THE WITNESS: I think that's part of 18 that report.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. So that's not a true statement, that 21 Ethicon had not seen changes in the material, in the 22 ten-year data, correct?</p> <p>23 MR. THOMAS: Object to the form of 24 the question.</p> <p>25 THE WITNESS: Well, where there were</p>	<p style="text-align: center;">Page 414</p> <p>1 Q. Well, there are certainly changes 2 seen by Dan Burkley in the study, correct?</p> <p>3 MR. THOMAS: Object to the form of 4 the question.</p> <p>5 THE WITNESS: Surface changes were 6 observed.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Degradation was observed, correct?</p> <p>9 MR. THOMAS: Object to the form of 10 the question.</p> <p>11 THE WITNESS: As noted in the report.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. Degradation was observed? Yes or no?</p> <p>14 MR. THOMAS: Object to the form of 15 the question.</p> <p>16 THE WITNESS: Could you pull up that 17 previous screen?</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. Degradation in Prolene?</p> <p>20 A. Yes.</p> <p>21 Q. The e-mail goes on by Dr. Divilio, 22 who says: I am wondering if the effects that 23 Ramshaw, et al., are seeing are due to the abrasions 24 of fiber against fiber in a mesh construct due to flexing that occurs after implantation, trauma to</p>

## Confidential - Subject to Protective Order

Page 415	Page 417
<p>1 the mesh as a result of implantation from a patient,  2 or actual oxidation. I think it's important that we  3 understand what they're seeing, as this group has a  4 well-funded lab that will be looking at explanted  5 mesh in great volume over the next couple of years,  6 and our current concepts are going to be challenged.  7 Do you see that there?</p> <p>8 A. Yes.</p> <p>9 Q. Do you recall this e-mail?</p> <p>10 A. No, I do not, although it's important  11 to note that they're talking about Bard Composix  12 mesh, which is a multi-component mesh, and it's not  13 Prolene polypropylene mesh.</p> <p>14 Q. Well, you're familiar with the  15 Costello studies that found degradation of the  16 polypropylene, correct?</p> <p>17 MR. THOMAS: Object to the form of  18 the question.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. You understand that Costello was  21 working with the Ramshaw group?</p> <p>22 MR. THOMAS: Object to the form of  23 the question.</p> <p>24 THE WITNESS: I am trying to recall  25 the detail. Let's look at the Costello paper.</p>	<p>1 don't understand the question. Object to the form  2 of the question.</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. You're talking about generic with  5 respect to additive packages. You'd agree that the  6 Prolene that was used in the seven -- the five-year,  7 ten-year results, and the seven-year, ten-year dog  8 results also had the antioxidant additives, correct?</p> <p>9 A. Yes, and I believe the additive  10 package is what prevented a loss of molecular weight  11 and tensile strength.</p> <p>12 Q. It didn't prevent surface  13 degradation, did it?</p> <p>14 MR. THOMAS: Object to the form of  15 the question.</p> <p>16 THE WITNESS: Well, there is evidence  17 that it did not.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. So Dr. Dieter -- am I pronouncing his  20 name correctly?</p> <p>21 A. Dieter Engel.</p> <p>22 Q. Dieter Engel? Dr. Engel, he's a  23 doctor from Germany, right?</p> <p>24 A. He was head of the R&amp;D group for a  25 while.</p>
<p style="text-align: center;">Page 416</p> <p>1 BY MR. THORNBURGH:</p> <p>2 Q. Well, I'm just asking you -- we'll  3 look at the Costello paper.</p> <p>4 A. Okay. Okay.</p> <p>5 Q. I'm asking you: Are you aware  6 sitting here right now, based on your memory,  7 whether or not the polypropylene in the Costello  8 study showed evidence of surface degradation?</p> <p>9 MR. THOMAS: Object to the form of  10 the question; scope.</p> <p>11 THE WITNESS: First, I thought it was  12 the Bard product. You can correct me --</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. Polypropylene. My question to you is  15 polypropylene.</p> <p>16 A. Polypropylene -- polypropylenes are  17 not generic substances. They're very different,  18 depending on an additive package that's required to  19 provide stabilization, manufacturing process, aid,  20 so on and so forth. So I would not equate Prolene  21 polypropylene with any other manufacturer's  22 polypropylene.</p> <p>23 Q. Like the additive package in the  24 Prolene?</p> <p>25 MR. THOMAS: What's the question? I</p>	<p style="text-align: center;">Page 418</p> <p>1 Q. For Ethicon, correct?</p> <p>2 A. Yes.</p> <p>3 Q. And Dr. Engel, on July 6, 2007,  4 responds. And you're copied on this e-mail, right?</p> <p>5 Do you see that?</p> <p>6 A. Yes.</p> <p>7 Q. Tom, thanks for checking back and  8 asking for my scientific perspective.</p> <p>9 There have been a number of anecdotal  10 reports that polypropylene mesh shows some changes  11 in the surface with time, including Ethicon's own  12 internal studies.</p> <p>13 Correct?</p> <p>14 MR. THOMAS: Object to the form of  15 the question; scope.</p> <p>16 THE WITNESS: Anecdotal reports?</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. You'd agree that the seven-year --  19 the five-year data and seven-year data from the  20 ten-year dog studies isn't anecdotal; that's an  21 actual scientific experiment that found surface  22 degradation. Correct?</p> <p>23 A. Yes. There were observations of  24 surface cracking and degradation.</p> <p>25 Q. Dr. Engel goes on to say the Aachen</p>

## Confidential - Subject to Protective Order

Page 419	Page 421
<p>1 group -- which would include Doctors -- Professors 2 Klinge and Klosterhalfen, right? 3       A. Yes. They were with the Aachen group 4 for some time. 5       Q. The Aachen group, who has so far 6 collected more than a thousand explanted meshes, 7 showed examples many years back. Do you see that? 8       A. Yes. 9       Q. You understand, don't you, that the 10 Aachen group, including Klinge and Klosterhalfen, 11 were consultants paid by Ethicon to evaluate 12 polypropylene meshes, don't you? 13       MR. THOMAS: Object to the form of 14 the question. 15       THE WITNESS: That's my 16 understanding. 17 BY MR. THORNBURGH: 18       Q. And when -- during the time that 19 Dr. Klosterhalfen was a consultant for Ethicon, he 20 evaluated a thousand explanted meshes which also 21 showed degradation? 22       MR. THOMAS: Object to the form of 23 the question. 24 BY MR. THORNBURGH: 25       Q. Do you understand that, sir?</p>	<p>1 tests in-house with accelerated aging, too, and 2 found microscopic changes in the surface of the mesh 3 fibers. 4       So there are additional studies 5 according to Dr. Engel of -- by Ethicon which also 6 showed surface degradation, correct? 7       MR. THOMAS: Object to the form of 8 the question. 9       THE WITNESS: Yes. He's talking 10 about accelerated aging in conditions of increased 11 temperature with the intention to increase any 12 impacts of aging. 13 BY MR. THORNBURGH: 14       Q. Did you include any of those in-house 15 accelerated aging studies in your list of studies 16 regarding degradation that found microscopic changes 17 in the surface of the mesh? 18       A. I am not aware of them. I did not 19 include it in any of these documents. 20       Q. In fact, you did not include those 21 studies in your material related to this question of 22 degradation, did you? 23       MR. THOMAS: Object to the form of 24 the question; asked and answered. 25       THE WITNESS: I just said that. I</p>
<p style="text-align: center;">Page 420</p> <p>1       A. These are human -- I am understanding 2 that they're human explants that he's then 3 investigated. I don't know who the manufacturers 4 were, what products they were, but I see the 5 statement, and it stands as is. 6       Q. Human explants evaluating who? 7       Human explants will provide more 8 reliable clinical evidence, both of degradation and 9 the materials than your animal studies, won't they? 10       MR. THOMAS: Object to the form of 11 the question; scope. 12       THE WITNESS: No. No, I do not 13 believe that, because, typically, these are meshes 14 or products explanted for a particular reason. 15 Likely, they failed. It could be an infected site. 16       The best way in a preclinical way to 17 understand the intrinsic characteristics of 18 materials is to implant them in very controlled 19 animal model systems. 20 BY MR. THORNBURGH: 21       Q. Did you ever look at any explanted 22 meshes from humans? 23       A. No, other than photographs or photo 24 micrographs and publications discussing such cases. 25       Q. Dr. Engel says: We did different</p>	<p style="text-align: center;">Page 422</p> <p>1 just said that. 2 BY MR. THORNBURGH: 3       Q. Why didn't you include those studies 4 in your list -- 5       MR. THOMAS: Object to the form of 6 the question. 7 BY MR. THORNBURGH: 8       Q. -- or in your binder regarding the 9 statement or the claims by Ethicon that the Prolene 10 in the TVT will not degrade? 11       A. The literature searches conducted 12 that form the basis for the documents that are 13 compiled here were a search of the Ethicon corporate 14 R&amp;D central files. I was not aware of any studies 15 done in Germany that might have impact or contribute 16 knowledge about these topics. If I had, they would 17 have been included. 18       Q. They're not included, correct? 19       MR. THOMAS: Object to the form of 20 the question; asked and answered. 21 BY MR. THORNBURGH: 22       Q. You haven't even had a chance to 23 review those studies, have you? 24       A. Well, the first question is that I 25 have not -- they're not included.</p>

## Confidential - Subject to Protective Order

Page 423	Page 425
<p>1                   And the second, I've not reviewed 2                   them.</p> <p>3                   MR. THORNBURGH: Counsel, I'd like 4                   production of these in-house studies that showed 5                   microscopic changes in the surface of the mesh 6                   fibers using the accelerated aging method.</p> <p>7                   MR. THOMAS: As I told you yesterday 8                   at the conclusion of the deposition, if you'd remind 9                   me what you've asked me for, we'll respond 10                  appropriately.</p> <p>11                  MR. THORNBURGH: I had to make a note 12                  so I could remember to remind you to produce those.</p> <p>13                  MR. THOMAS: I won't do it unless you 14                  remind me. I'll forget.</p> <p>15                  MR. THORNBURGH: Well, they should 16                  have been produced already.</p> <p>17                  MR. THOMAS: Please.</p> <p>18                  MR. THORNBURGH: Well, they should 19                  have.</p> <p>20                  BY MR. THORNBURGH:</p> <p>21                  Q.    We did different tests in-house with 22                  accelerated aging, too, and found microscopic 23                  changes in the surface of the mesh fiber.</p> <p>24                  What is happening is related to the 25                  specific stretching of the fibers when producing</p>	<p>1                   BY MR. THORNBURGH: 2                   Q.    Well, this would certainly indicate 3                   that Dr. Engel is requesting that no additional 4                   studies be done to generate extra data, correct? 5                   MR. THOMAS: Object to the form of 6                   the question.</p> <p>7                   THE WITNESS: Yes. And with good 8                   reason.</p> <p>9                   BY MR. THORNBURGH: 10                  Q.    Because you already knew that the 11                  surface layer of Prolene polypropylene is 12                  susceptible to surface degradation, correct? 13                  MR. THOMAS: Object to the form of 14                  the question.</p> <p>15                  THE WITNESS: No. He says we 16                  understand the mechanism pretty well. No need to do 17                  further studies.</p> <p>18                  BY MR. THORNBURGH: 19                  Q.    Because Ethicon already knew that the 20                  surface layer of Prolene polypropylene is 21                  susceptible to surface degradation, correct? 22                  MR. THOMAS: Object to the form of 23                  the question.</p> <p>24                  THE WITNESS: Yes.</p> <p>25                  BY MR. THORNBURGH:</p>
<p>1                   sutures. As you know, you have to stretch the 2                   fibers to a very high degree to get the required 3                   breaking strength. That leads to a very high 4                   orientation of the polymer chains and, in turn, 5                   makes the surface, the outer fibrils of material 6                   relatively susceptible to damage from mechanical 7                   stress.</p> <p>8                   Do you see that?</p> <p>9                  A.    Yes.</p> <p>10                 Q.    You haven't looked at those studies, 11                 have you?</p> <p>12                 A.    No.</p> <p>13                 Q.    He goes on to write: All in all, I 14                 believe we understand the mechanism pretty well and 15                 wouldn't suggest to generate extra data.</p> <p>16                 Do you see that?</p> <p>17                 A.    Yes.</p> <p>18                 Q.    Were you told by Ethicon -- you were 19                 included as part of this e-mail string. Were you 20                 told not to generate additional data regarding the 21                 potential degradation of Prolene polypropylene 22                 meshes?</p> <p>23                 MR. THOMAS: Object to the form of 24                 the question.</p> <p>25                 THE WITNESS: No.</p>	<p>1                   Q.    What is the future? We will change 2                   the material of our mesh and move to Pronova as the 3                   future material platform for mesh. Pronova has a 4                   reduced foreign body reaction compared to Prolene, 5                   as shown in several animal studies.</p> <p>6                   Did you include the animal studies 7                   that showed that Pronova has a reduced foreign body 8                   reaction compared to Prolene in any of the studies 9                   you list in any of the binders that you brought with 10                  you today?</p> <p>11                  MR. THOMAS: Object to the form of 12                  the question; scope.</p> <p>13                  THE WITNESS: Yes. I've included 14                  three studies, one looking at Pronova suture 15                  compared to Prolene suture and Dormier repair in 16                  rabbits, intramuscular implantation study for six 17                  months in rats, and ophthalmic tissue reaction 18                  studies for 90 days in rats.</p> <p>19                  BY MR. THORNBURGH:</p> <p>20                  Q.    Do you agree that with this 21                  statement, that Pronova has reduced foreign body 22                  reaction compared to Prolene --</p> <p>23                 A.    No, I did not.</p> <p>24                 Q.    -- as shown in several animal studies 25                 conducted by Ethicon?</p>

## Confidential - Subject to Protective Order

Page 427	Page 429
<p>1                   MR. THOMAS: Object to the form of 2 the question.</p> <p>3                   THE WITNESS: I've not seen those 4 studies. The three studies that Ethicon has 5 conducted that I just mentioned show comparable 6 tissue reaction to Prolene suture.</p> <p>7 BY MR. THORNBURGH:</p> <p>8                   Q. You did not include in any of your 9 binders that you brought with you the several animal 10 studies that show that Pronova has reduced foreign 11 body reaction compared to Prolene, did you, sir?</p> <p>12                  MR. THOMAS: Object to the form of 13 the question; scope.</p> <p>14                  THE WITNESS: I don't know the 15 details of these studies. Standard biocompatibility 16 studies were done looking at tissue reaction to 17 Pronova suture compared to Prolene.</p> <p>18                  These studies may be surgical 19 functionality studies with different prototype 20 meshes. I don't know. I can't respond to that 21 question specifically unless I see the studies that 22 he's making.</p> <p>23 BY MR. THORNBURGH:</p> <p>24                  Q. This really is a "yes" or "no" 25 question.</p>	<p>1                   BY MR. THORNBURGH: 2                   Q. You haven't considered those studies 3 before you walked in today as the person most 4 knowledgeable about the tissue response and tissue 5 reaction, correct?</p> <p>6                   MR. THOMAS: Object to the form of 7 the question; scope.</p> <p>8                   THE WITNESS: Studies to support the 9 biocompatibility of Pronova suture were conducted in 10 comparison to Prolene suture in a standard tissue 11 reaction study, a protocol, as required by ISO 12 10993, Part 1, and G95 FDA guidance on 13 biocompatibility testing.</p> <p>14 BY MR. THORNBURGH:</p> <p>15                  Q. And -- 16                  A. And other studies that might have 17 been conducted for other purposes, I don't know. 18 They're not necessary to support the 19 biocompatibility of -- of a Pronova suture. But 20 there are other studies that that have been 21 conducted. 22                  If they provide evidence to counter 23 the study results from the three Pronova studies 24 that I've just mentioned, I'll be glad to look at 25 those.</p>
<p style="text-align: center;">Page 428</p> <p>1                  A. No, it's not.</p> <p>2                  Q. You did not provide in any of the 3 binders that you brought with you today the studies, 4 the several animal studies, that show that Pronova 5 has a reduced foreign body reaction compared to 6 Prolene, correct?</p> <p>7                  MR. THOMAS: Object to the form of 8 the question.</p> <p>9                  THE WITNESS: Yes.</p> <p>10 BY MR. THORNBURGH:</p> <p>11                  Q. He goes on to say that Pronova will 12 improve the perceived biocompatibility of our mesh.</p> <p>13                  Do you see that?</p> <p>14                  A. Yes, I see that, but don't agree.</p> <p>15                  Q. Of course.</p> <p>16                  A. We've got three studies that 17 demonstrate that the tissue reaction to Prolene 18 suture is comparable to Prolene -- to Pronova 19 suture.</p> <p>20                  Q. You haven't even seen the studies 21 that Dr. Engel is referring to that show that 22 Pronova has a reduced foreign body reaction.</p> <p>23                  MR. THOMAS: Object to the form of 24 the question; scope.</p> <p>25                  THE WITNESS: That's correct.</p>	<p style="text-align: center;">Page 430</p> <p>1                  Q. So the answer to my question is that 2 you have not considered before you walked in here 3 today the Pronova studies that showed less foreign 4 body reaction and better biocompatibility, correct?</p> <p>5                  MR. THOMAS: Object to the form of 6 the question; scope.</p> <p>7                  THE WITNESS: I'd have to look at 8 those studies to make that conclusion.</p> <p>9 BY MR. THORNBURGH:</p> <p>10                 Q. You didn't look at those studies 11 before you walked in here today, did you?</p> <p>12                 MR. THOMAS: Object to the form of 13 the question.</p> <p>14                 THE WITNESS: No, I did not.</p> <p>15 BY MR. THORNBURGH:</p> <p>16                 Q. Besides, Pronova is much less 17 susceptible to mechanical damage.</p> <p>18                 As you testified to earlier, PVDF, 19 which is part of the copolymer of Pronova, is a more 20 inert, more stable material than Prolene, correct?</p> <p>21                 MR. THOMAS: Object to the form of 22 the question; scope.</p> <p>23                 THE WITNESS: Yes.</p> <p>24 BY MR. THORNBURGH:</p> <p>25                 Q. It is much easier to process in the</p>

## Confidential - Subject to Protective Order

Page 431	Page 433
<p>1 knitting machine, less quality issues. Do you see 2 that?</p> <p>3 MR. THOMAS: Object to the form of 4 the question; scope.</p> <p>5 THE WITNESS: Yes.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Did you talk to -- as the person that 8 was designated as the person most knowledgeable 9 under the designated topics, did you talk to 10 Dr. Engel about his experience with PVDF sutures and 11 Prolene sutures and that Prolene sutures induce a 12 greater inflammatory response than Pronova or PVDF?</p> <p>13 MR. THOMAS: Object to the form of 14 the question.</p> <p>15 THE WITNESS: No.</p> <p>16 BY MR. THORNBURGH:</p> <p>17 Q. Don't you -- you agree as a scientist 18 that generation of data that could help better 19 answer questions, safety questions, is important, 20 right?</p> <p>21 MR. THOMAS: Object to the form of 22 the question.</p> <p>23 THE WITNESS: That's why we have 18 24 binders of studies surrounding us that contain 25 studies conducted in the mid 1960s.</p>	<p>1 interface between implanted material and surrounding 2 tissue.</p> <p>3 THE VIDEOGRAPHER: I've got to change 4 the tape.</p> <p>5 It's now 1:08. Going off the video 6 record.</p> <p>7 This concludes Volume 2, Tape 2 of 8 the videotape deposition of Dr. Thomas A. Barbolt. 9 (Short break.)</p> <p>10 THE VIDEOGRAPHER: We're back on the 11 video record. It's 1:14.</p> <p>12 This begins Volume 2, Tape Number 3 13 in the videotape deposition of Dr. Thomas A. 14 Barbolt.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. Dr. Barbolt, we talked briefly about 17 Dr. Ramshaw and Dr. Costello. Do you remember that?</p> <p>18 A. Yes.</p> <p>19 Q. And your e-mail -- the e-mail that 20 you were included on discussed studies that were 21 done by Ramshaw's group that found degradation of 22 polypropylene?</p> <p>23 A. Yes.</p> <p>24 Q. And you had indicated that you had 25 reviewed this study, correct?</p>
<p style="text-align: center;">Page 432</p> <p>1 BY MR. THORNBURGH:</p> <p>2 Q. Vast --</p> <p>3 A. And continue to this day.</p> <p>4 Q. Vast majority of those are suture 5 studies, correct?</p> <p>6 MR. THOMAS: Object to the form of 7 the question.</p> <p>8 THE WITNESS: We'd have to do the 9 exercise.</p> <p>10 BY MR. THORNBURGH:</p> <p>11 Q. You didn't do the exercise before you 12 came in here today?</p> <p>13 A. No. I didn't think it necessary, 14 because I believe that the data that's generated for 15 suture containing the same Prolene polypropylene 16 fiber as in mesh are directly applicable and 17 relevant.</p> <p>18 Q. General scientific principle: The 19 greater the surface area of an implanted medical 20 device, the greater the inflammatory response.</p> <p>21 MR. THOMAS: Object to the form of 22 the question.</p> <p>23 THE WITNESS: There's some 24 relationship to increased surface area and 25 increasing tissue action, because that's the</p>	<p style="text-align: center;">Page 434</p> <p>1 MR. THOMAS: Object to the form of 2 the question. It's not in preparation for this 3 deposition.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. Are you not prepared to talk about 6 the Costello studies?</p> <p>7 A. No. That's not one of the studies 8 that I brought with me today.</p> <p>9 Q. Just so the record is clear, because 10 I think you were indicating that maybe it was the -- 11 because there was a composite mesh that may have 12 been studied, that you weren't aware whether or not 13 that was polypropylene, so I just want to point out 14 in the record this conclusion.</p> <p>15 Overall, the results support our 16 hypothesis that in vivo -- inside the body, right?</p> <p>17 A. Yes.</p> <p>18 Q. -- oxidation plays a role in the 19 degradation of polypropylene.</p> <p>20 Do you see that?</p> <p>21 MR. THOMAS: Object to the form of 22 the question.</p> <p>23 THE WITNESS: Yes. And as I pointed 24 out earlier, that's not Prolene polypropylene. 25 That's Bard polypropylene.</p>

## Confidential - Subject to Protective Order

Page 435	Page 437
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. Well, it's polypropylene,</p> <p>3 nonetheless.</p> <p>4 A. There's a big difference, because as</p> <p>5 we discussed earlier, polypropylene without an</p> <p>6 appropriate antioxidant package is susceptible to</p> <p>7 degradation. And if you add an appropriate</p> <p>8 antioxidant package, it is resistant to oxidation.</p> <p>9 Q. Well, we know from the ten-year --</p> <p>10 the five-year data, from the ten-year dog study,</p> <p>11 Ethicon study, seven-year data from that study, the</p> <p>12 Prolene polypropylene was susceptible to surface</p> <p>13 cracking, right?</p> <p>14 MR. THOMAS: Object to the form of</p> <p>15 the question.</p> <p>16 THE WITNESS: It was susceptible to</p> <p>17 surface cracking, but it did not result in loss of</p> <p>18 molecular weight or impact on tensile strength, key</p> <p>19 mechanical properties of polypropylene fibers.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. In this statement, in this claim in</p> <p>22 the IFU, it doesn't say that the material is</p> <p>23 susceptible to surface degradation, does it?</p> <p>24 MR. THOMAS: Object to the form of</p> <p>25 the question.</p>	<p>1 weight or tensile -- tensile testing. That's the</p> <p>2 kind of information that's useful to surgeons, not</p> <p>3 any other observations that might be observed but</p> <p>4 don't translate into significant impact on</p> <p>5 mechanical characteristics.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. That's absurd.</p> <p>8 MR. THOMAS: Excuse me.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. You're not even -- you're not a</p> <p>11 clinician, are you?</p> <p>12 MR. THOMAS: Please. Stop, stop.</p> <p>13 Stop.</p> <p>14 Thomas, let's take a break.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. You're not a clinician, are you?</p> <p>17 MR. THOMAS: Back up. Don't tell my</p> <p>18 witness his testimony is absurd. You can ask</p> <p>19 questions and get your answers, and we'll object to</p> <p>20 form, but you just ask him straight questions, and</p> <p>21 you'll get straight answers.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. You're not a medical doctor, are you?</p> <p>24 A. That's correct.</p> <p>25 Q. You've never treated patients, have</p>
<p>1 THE WITNESS: No, it does not.</p> <p>2 This is an instructions for use.</p> <p>3 It's trying to relay to the end user of the product</p> <p>4 important information, and for surgeons. No matter</p> <p>5 surface changes -- if there's no impact on molecular</p> <p>6 weight or tensile strength, the surface changes are</p> <p>7 of no consequence.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. This is important -- the IFU provides</p> <p>10 important information to physicians, correct?</p> <p>11 MR. THOMAS: Object to the form of</p> <p>12 the question; scope.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. That's what they just said, right?</p> <p>15 A. It's intended to relay to the end</p> <p>16 users, the surgeons, information that they would</p> <p>17 find most useful.</p> <p>18 Q. And Ethicon did not relay any</p> <p>19 information to the physicians in this IFU that the</p> <p>20 Prolene in the TVT mesh is susceptible to surface</p> <p>21 degradation, did they?</p> <p>22 MR. THOMAS: Object to the form of</p> <p>23 the question.</p> <p>24 THE WITNESS: That is not useful</p> <p>25 information in light of no impact on molecular</p>	<p>1 you?</p> <p>2 A. Of course not.</p> <p>3 Q. You've never looked at an IFU and</p> <p>4 relied on an IFU in having a risk/benefit discussion</p> <p>5 with patients, have you?</p> <p>6 A. That's not my role in preclinical.</p> <p>7 Q. But, yet, you're here telling the</p> <p>8 ladies and gentlemen of the jury that information</p> <p>9 about the surface degradation of Prolene that's</p> <p>10 implanted permanently in women -- women's pelvises,</p> <p>11 is not important?</p> <p>12 MR. THOMAS: Excuse me.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. That's the position that you took?</p> <p>15 MR. THOMAS: You're arguing with the</p> <p>16 witness.</p> <p>17 MR. THORNBURGH: I am not.</p> <p>18 MR. THOMAS: Yes, you are. And we're</p> <p>19 not going to argue with him. And I object to the</p> <p>20 form of the question.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. You're taking the position on behalf</p> <p>23 of Ethicon --</p> <p>24 MR. THOMAS: His position has been</p> <p>25 taken. His answer has been given.</p>

## Confidential - Subject to Protective Order

Page 439	Page 441
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. You're taking the position --</p> <p>3 MR. THORNBURGH: Dave, you can</p> <p>4 object.</p> <p>5 MR. THOMAS: You're asking the same</p> <p>6 question three times.</p> <p>7 MR. THORNBURGH: Dave, you can</p> <p>8 object.</p> <p>9 MR. THOMAS: I can stop the</p> <p>10 deposition, too.</p> <p>11 MR. THORNBURGH: Dave, you can</p> <p>12 object.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. Mr. Barbolt, you're taking this</p> <p>15 position as the company spokesperson for Ethicon</p> <p>16 that information about surface degradation is not</p> <p>17 important to clinicians when they're relying on the</p> <p>18 information for use and having risk/benefit</p> <p>19 discussions with their patients who will be</p> <p>20 implanted with this medical device for the rest of</p> <p>21 their lives in their -- in and around their sexual</p> <p>22 and reproductive organs. That's the position?</p> <p>23 MR. THOMAS: Object to the form of</p> <p>24 the question; scope.</p> <p>25 THE WITNESS: The IFU is not the</p>	<p>1 nonresponsive.</p> <p>2 MR. THOMAS: Did you finish your</p> <p>3 answer? Did you finish your answer?</p> <p>4 THE WITNESS: Yes.</p> <p>5 MR. THOMAS: Okay. Thank you.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. You defer to a clinician about</p> <p>8 whether or not surface degradation is important</p> <p>9 information that they need when having a</p> <p>10 risk/benefit discussion with their patients,</p> <p>11 correct?</p> <p>12 A. I think a preclinical scientist will</p> <p>13 always defer to a clinician in making those</p> <p>14 judgments with patients.</p> <p>15 Q. You made a statement earlier, general</p> <p>16 scientific principle, that medical devices with a</p> <p>17 larger, greater surface area will have a greater</p> <p>18 inflammatory response than one with a lower surface</p> <p>19 area. Do you remember that statement?</p> <p>20 A. Yes. And let me --</p> <p>21 Q. General scientific principle, right?</p> <p>22 A. Right. And let me remind you. It's</p> <p>23 a general scientific principle. And the exact</p> <p>24 tissue reaction to an implant needs to be determined</p> <p>25 by an implantation study, the results of which will</p>
<p style="text-align: center;">Page 440</p> <p>1 responsibility of folks in preclinical. The IFU is</p> <p>2 put together by regulatory and medical professionals</p> <p>3 gathering input from all areas of manufacturing,</p> <p>4 preclinical, physical testing, whatever is necessary</p> <p>5 in their minds to provide the most useful</p> <p>6 information to the end users as possible.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. So would you defer to a clinician</p> <p>9 about whether or not information about surface</p> <p>10 degradation of products that are being implanted</p> <p>11 permanently in and around the sexual and</p> <p>12 reproductive organs of women is important</p> <p>13 information to have?</p> <p>14 MR. THOMAS: Object to the form of</p> <p>15 the question; scope.</p> <p>16 THE WITNESS: Would I defer to</p> <p>17 clinicians to make that judgment? With the</p> <p>18 information that's been provided in this case by</p> <p>19 preclinical relating to three things in that study;</p> <p>20 one, observations of surface degradation; two,</p> <p>21 quantitative measurements of molecular weight; and,</p> <p>22 three, quantitative measures of tensile strength.</p> <p>23 Molecular weight and tensile strength</p> <p>24 testing indicate there's no evidence of degradation.</p> <p>25 MR. THORNBURGH: Move to strike;</p>	<p style="text-align: center;">Page 442</p> <p>1 overrule any general scientific principle and will</p> <p>2 rely on the specifics of real and actual data</p> <p>3 generated from a study.</p> <p>4 Q. And in this study regarding surface</p> <p>5 area, these investigators, who actually, by the way,</p> <p>6 study degradation, found that degradation -- that in</p> <p>7 vivo oxidation plays a role in the degradation of</p> <p>8 polypropylene hernia mesh materials and that there</p> <p>9 may be a difference in the degree of oxidation</p> <p>10 between a heavyweight material and a lightweight</p> <p>11 material because of a reduced inflammatory response.</p> <p>12 Do you see that?</p> <p>13 MR. THOMAS: Object to the form of</p> <p>14 the question.</p> <p>15 THE WITNESS: This is not an Ethicon</p> <p>16 product.</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. That wasn't the question.</p> <p>19 A. I am here to talk about Ethicon</p> <p>20 products.</p> <p>21 Q. Polypropylene is contained within</p> <p>22 Ethicon products, correct?</p> <p>23 A. As I indicated earlier, all</p> <p>24 polypropylenes are not the same. Polypropylenes</p> <p>25 with no additive package are susceptible to</p>

## Confidential - Subject to Protective Order

Page 443	Page 445
<p>1 oxidation. And I got to imagine that polypropylene  2 resin with varying kinds of antioxidant packages  3 would have varying protective actions against  4 oxidation.</p> <p>5 Q. These are antioxidants that you  6 testified earlier that there's evidence that those  7 additives leach out of the polypropylene that's used  8 in the TVT devices, correct?</p> <p>9 MR. THOMAS: Object to the form of  10 the question.</p> <p>11 THE WITNESS: Yes. I think there's  12 evidence that they leak out.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. And would you agree that there would  15 be a difference in the degree of oxidation between a  16 heavyweight material and a lightweight material  17 because of the reduced inflammatory response as a  18 result of a reduction in the surface area that we  19 discussed earlier?</p> <p>20 MR. THOMAS: Object to the form of  21 the question; scope.</p> <p>22 THE WITNESS: It's a theoretical --  23 it is a theoretical discussion.</p> <p>24 BY MR. THORNBURGH:</p> <p>25 Q. Yes or no?</p>	<p>1 record. It's 1:34.  2 BY MR. THORNBURGH:  3 Q. Dr. Barbolt, you've also been  4 designated by Ethicon to discuss or testify  5 regarding the specifics of all testing related to  6 the TVT products during the design and development  7 stages, including but not limited to leaching,  8 correct?</p> <p>9 A. Yes.  10 MR. THOMAS: Do you want those  11 notebooks now?</p> <p>12 MR. THORNBURGH: I don't know that we  13 necessarily need all of them, so why don't we -- why  14 don't we move forward, and if we need them, we'll --  15 THE WITNESS: Let me get this first  16 one, which is an index. They're -- the index is all  17 the same.</p> <p>18 BY MR. THORNBURGH:  19 Q. So let's -- first let's talk about  20 the submission to the FDA, October of 1997, the  21 five -- the 510(k) for the TVT-Retropubic.  22 Did you bring that with you today?  23 MR. THOMAS: Maybe. Do you have one  24 handy?  25 MR. THORNBURGH: I think I do.</p>
<p style="text-align: center;">Page 444</p> <p>1 A. I don't know what materials they're  2 talking about. I don't know what additive packages  3 they're talking about.</p> <p>4 Q. How about polypropylene?</p> <p>5 MR. THOMAS: Excuse me. Let's slow  6 down a little bit. You're running into each other,  7 and the record is terrible, and I don't get a chance  8 to object, and I need my chance to object. Let's  9 slow down so everybody gets a chance to say what  10 they need to say.</p> <p>11 MR. THORNBURGH: I'll withdraw and  12 move to strike everything after, it's a theoretical  13 discussion.</p> <p>14 MR. THOMAS: Excuse me. I need to  15 say something.</p> <p>16 I said the record is terrible. I  17 should have said we risk creating a terrible record,  18 because I am confident that our court reporter is  19 doing absolutely the best that she can.</p> <p>20 MR. THORNBURGH: Off the record for a  21 moment.</p> <p>22 THE VIDEOGRAPHER: Off the video  23 record, 1:26.</p> <p>24 (Short break.)</p> <p>25 THE VIDEOGRAPHER: Back on the video</p>	<p style="text-align: center;">Page 446</p> <p>1 THE WITNESS: Do you want to bring up  2 the --  3 MR. THOMAS: Let him give you one.  4 THE WITNESS: Okay. Okay.</p> <p>5 BY MR. THORNBURGH:  6 Q. It's been premarked as Exhibit  7 Number T-2017. The Bates number is  8 ETH.MESH.00019863.</p> <p>9 Now, before I get into the discussion  10 about the topics and studies regarding leaching --  11 MR. THOMAS: I'm sorry. This begins  12 with Attachment 5. And the bottom of it says Page 3  13 of 69. Do you know if this was the complete --  14 MR. THORNBURGH: Oh, you know what?  15 Sorry. I may have given you the wrong --  16 If you want to give that back to me.  17 I am not exactly sure what I just handed you there.  18 MR. THOMAS: Me either.  19 BY MR. THORNBURGH:  20 Q. Okay. Let's do this again. I am  21 going to hand you what's been premarked as Exhibit  22 Number 2105, which is related to the 510(k)  23 submission regarding the TVT-Retropubic system.  24 MR. THOMAS: May I have one, please?  25 MR. THORNBURGH: Yes.</p>

## Confidential - Subject to Protective Order

Page 447	Page 449
<p>1                   MR. THOMAS: Thank you. This one is 2 highlighted. Is it supposed to be?</p> <p>3                   MR. THORNBURGH: That's okay.</p> <p>4                   BY MR. THORNBURGH:</p> <p>5                   Q. Now, this is a submission that 6 Ethicon made to the FDA regarding the TTV device, 7 correct?</p> <p>8                   A. Yes. That's what it looks like.</p> <p>9                   Q. And before we get into a discussion 10 about the cytotoxicity testing and the leaching 11 issues, I just want to turn your attention to 12 ETH.MESH.00371515.</p> <p>13                  A. 515.</p> <p>14                  Okay.</p> <p>15                  Q. Now, this is the statement that we've 16 discussed over the last two days regarding minimal 17 inflammatory transitory tissue reaction and that the 18 material is not absorbed, nor is it subject to 19 degradation. Right?</p> <p>20                  A. Yes.</p> <p>21                  Q. Now, the statement, the material is 22 not absorbed, nor is it subject to degradation or 23 weakening by the action of tissue enzymes, was 24 provided to the FDA in the 510(k) submission on 25 October 29, 2007, correct?</p>	<p>1                   about this before.</p> <p>2                   BY MR. THORNBURGH:</p> <p>3                   Q. Correct?</p> <p>4                   A. And as I indicated before, there were 5 three endpoints in that experiment that are 6 important: Subjective observations, observations by 7 a human being about what's on the surface of the 8 suture, and then quantitative assessments of 9 molecular weight, and quantitative assessments of 10 tensile strength.</p> <p>11                  In terms of surface changes, surface 12 changes were reported. In terms of molecular weight 13 and tensile strength, no impact on either of those 14 parameters, which would lead one to conclude that 15 there's no evidence of degradation that's 16 meaningful.</p> <p>17                  MR. THORNBURGH: Move to strike; 18 nonresponsive.</p> <p>19                  BY MR. THORNBURGH:</p> <p>20                  Q. Sir, do you think it's okay for 21 Ethicon to misrepresent information in a 510(k) 22 submission to the FDA regarding surface cracking?</p> <p>23                  MR. THOMAS: Object to the form of 24 the question.</p> <p>25                  THE WITNESS: I don't think they've</p>
<p style="text-align: center;">Page 448</p> <p>1                   MR. THOMAS: Object to the form of 2 the question; scope.</p> <p>3                   THE WITNESS: 2007?</p> <p>4                   BY MR. THORNBURGH:</p> <p>5                   Q. I'm sorry. October 29, 1997.</p> <p>6                   Correct?</p> <p>7                   A. Okay. That would be the time of the 8 submission of the 510(k) for TTV original or 9 retropubic.</p> <p>10                  Q. Right. So October 29, 1997 Ethicon 11 submitted to the FDA the 510(k) submission related 12 to the TTV-Retropubic, correct?</p> <p>13                  A. Yes.</p> <p>14                  Q. And in that submission, Ethicon 15 stated that the material is not absorbed, nor is it 16 subject to degradation.</p> <p>17                  Do you see that?</p> <p>18                  A. Yes.</p> <p>19                  Q. But as we've already established, by 20 1990 and 1992, Ethicon was aware from its own 21 internal studies that the Prolene in the TTV was 22 subject to surface degradation, correct?</p> <p>23                  MR. THOMAS: Object to the form of 24 the question.</p> <p>25                  THE WITNESS: We've talked a lot</p>	<p style="text-align: center;">Page 450</p> <p>1                   done that.</p> <p>2                   BY MR. THORNBURGH:</p> <p>3                   Q. Regarding surface degradation?</p> <p>4                   MR. THOMAS: Object to the form of 5 the question.</p> <p>6                   THE WITNESS: I do not think they've 7 done that.</p> <p>8                   BY MR. THORNBURGH:</p> <p>9                   Q. This statement says the material is 10 not subject to degradation.</p> <p>11                  That's what it says, right?</p> <p>12                  MR. THOMAS: Object to the form of 13 the question.</p> <p>14                  THE WITNESS: I've already explained 15 that the IFU is not the responsibility of 16 preclinical science. Preclinical scientists provide 17 information to regulatory folks and medical affairs 18 people and clinicians, their findings. And those 19 folks put together the most useful information for 20 the end user, the surgeon.</p> <p>21                  BY MR. THORNBURGH:</p> <p>22                  Q. It would be inappropriate for the FDA 23 to permit -- to misrepresent information about 24 degradation to the FDA, wouldn't it?</p> <p>25                  MR. THOMAS: Object to the form of</p>

## Confidential - Subject to Protective Order

Page 451	Page 453
<p>1 the question.</p> <p>2 THE WITNESS: I don't think they've</p> <p>3 done that.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. Well, the 1990 and 1992 internal</p> <p>6 studies showed surface degradation of the Prolene</p> <p>7 mesh, did it not?</p> <p>8 MR. THOMAS: Object to the form of</p> <p>9 the question.</p> <p>10 THE WITNESS: I've already</p> <p>11 explained --</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. Yes or no?</p> <p>14 A. I've already explained the -- my</p> <p>15 reasonings of this in answering this question on a</p> <p>16 number of occasions. And I can only conclude that</p> <p>17 the regulatory folks and clinical folks took the sum</p> <p>18 total of the results from that study and said, you</p> <p>19 know what? There's no impact on molecular weight.</p> <p>20 There's no impact on tensile strength. So there's</p> <p>21 no degradation. And that is what is reflected in</p> <p>22 this IFU.</p> <p>23 Q. That statement, sir, that you just</p> <p>24 made is inconsistent with the conclusions by the</p> <p>25 Ethicon employee who wrote that degradation in</p>	<p>1 contact with, correct?</p> <p>2 MR. THOMAS: Object to the form of</p> <p>3 the question.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. There's a question pending.</p> <p>6 MR. THOMAS: He's answered this same</p> <p>7 question twice today.</p> <p>8 THE WITNESS: First -- first, I've</p> <p>9 not seen the peeling that you're talking about.</p> <p>10 And, second, all the data that we've</p> <p>11 brought here today, some 49 reports, suggest that</p> <p>12 the tissue reaction to Prolene polypropylene suture</p> <p>13 in mesh is relatively mild and in some cases reduces</p> <p>14 in severity over time.</p> <p>15 So if there are any peeling off of</p> <p>16 pieces of the suture, as you would suggest, it's not</p> <p>17 having an impact on the tissue action.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. We saw in the Postlethwait paper that</p> <p>20 even minute fragments can cause independent</p> <p>21 inflammatory responses, right?</p> <p>22 MR. THOMAS: Object to the form of</p> <p>23 the question.</p> <p>24 THE WITNESS: The macro fragments</p> <p>25 that's discussed in the Postlethwait paper are not</p>
<p style="text-align: center;">Page 452</p> <p>1 Prolene is still increasing, right?</p> <p>2 MR. THOMAS: Object to the form of</p> <p>3 the question.</p> <p>4 THE WITNESS: All degradations are</p> <p>5 not created equal. Degradations that are important</p> <p>6 are changes in molecular weight and tensile</p> <p>7 strength. Anything less than that is uneventful</p> <p>8 trivial response, a trivial change, that has no</p> <p>9 impact on important mechanical characteristics like</p> <p>10 the tensile strength.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Do you think -- do you think that</p> <p>13 surface degradation of Prolene mesh would be</p> <p>14 unimportant to the FDA?</p> <p>15 MR. THOMAS: Object to the form of</p> <p>16 the question.</p> <p>17 THE WITNESS: Yes, as long as there</p> <p>18 were no impact on tensile strength and no impact on</p> <p>19 tissue reaction.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. You have to agree with me, sir, that</p> <p>22 if the material is peeling away and coming off of</p> <p>23 the Prolene fibers, that those -- those shards that</p> <p>24 peel away will increase or by itself cause an</p> <p>25 inflammatory response to tissue that it comes in</p>	<p style="text-align: center;">Page 454</p> <p>1 the same as what you're describing comes off the</p> <p>2 surface of a Prolene fiber, which we've not seen any</p> <p>3 of that in the images that we've discussed today.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. So Ethicon chose not to warn doctors</p> <p>6 or disclose to the FDA that the Prolene mesh is</p> <p>7 subject to surface degradation, correct?</p> <p>8 MR. THOMAS: Object to the form of</p> <p>9 the question; scope.</p> <p>10 THE WITNESS: Ethicon is trying to</p> <p>11 provide to the surgeons the totality of the result</p> <p>12 and the most significant result that they would be</p> <p>13 concerned about, and that is a breakdown of the</p> <p>14 polymer chains, which would be reflected in a loss</p> <p>15 of molecular weight and a loss of tensile strength,</p> <p>16 which would not be useful for a suture, a single</p> <p>17 strand suture, that's used for cardiovascular</p> <p>18 repair, of which surgeons rely on to maintain its</p> <p>19 tensile strength for the life of the patient.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. Are you done, sir? Are you done,</p> <p>22 sir?</p> <p>23 Dr. Barbolt, are you finished?</p> <p>24 A. Yes.</p> <p>25 MR. THORNBURGH: Move to strike;</p>

## Confidential - Subject to Protective Order

Page 455	Page 457
<p>1 nonresponsive.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Ethicon chose not to warn doctors or 4 to disclose to the FDA that the Prolene mesh is 5 subject to surface degradation in their 510(k) 6 submission, correct?</p> <p>7 MR. THOMAS: Object to the form of 8 the question; scope.</p> <p>9 He's not designated on this, Dan.</p> <p>10 THE WITNESS: It's not in this action 11 section.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. If I can turn your attention to Bates 14 Number ETH.MESH.00371544, this is the 15 biocompatibility test results, correct?</p> <p>16 A. Yes.</p> <p>17 Q. And you drafted this, didn't you?</p> <p>18 A. This is likely cut and paste from a 19 document that I would have provided, and it's part 20 of a 510(k) submission. This looks like my 21 language.</p> <p>22 Q. And on Page 41, ETH.MESH.00371545, 23 there's a discussion about cytotoxicity testing that 24 was performed by Ethicon through NAMSA under the 25 ISO 10993-5 guidelines which showed that</p>	<p>1 wrote.</p> <p>2 MR. THOMAS: I don't think he -- I 3 don't believe he cut and pasted.</p> <p>4 MR. THORNBURGH: Well, now you're 5 doing another speaking objection.</p> <p>6 MR. THOMAS: You asked him about this 7 at length in his last deposition. That's why I 8 remember it so well.</p> <p>9 MR. THORNBURGH: Well, the subject 10 matter that he's been designated to discuss is 11 leaching, which is covered by -- which is part of 12 the cytotoxicity, is it not?</p> <p>13 MR. THOMAS: But you've asked him 14 what he's done personally so far, and you've covered 15 this at length at the last deposition.</p> <p>16 Go ahead. It's your deposition.</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. Sir, are you prepared -- did you 19 prepare for this 30(b)(6) deposition to discuss the 20 cytotoxicity testing that was done at Ethicon?</p> <p>21 Are you the person most knowledgeable 22 and have you been prepared on that subject for this 23 30(b)(6) deposition?</p> <p>24 MR. THOMAS: He's been designated on 25 the topic as identified in the notice, and leaching</p>
<p>1 polypropylene mesh was moderate to severely 2 cytotoxic in vitro, correct?</p> <p>3 A. Yes.</p> <p>4 Q. And the polypropylene mesh component 5 of the sterile sheet -- this is apparently what you 6 wrote -- the polypropylene mesh component of the 7 sterile TVT device was cytotoxic, and only the 8 Elution test suggesting cytotoxic potential in this 9 sensitive test system.</p> <p>10 So you would agree with me that based 11 on the Elution test, there was evidence of 12 cytotoxicity in vitro, correct?</p> <p>13 A. Yes.</p> <p>14 Q. And then you wrote: However, the 15 long history of safe clinical use of polypropylene 16 as mesh and suture products suggest strongly that 17 this material is inherently biocompatible, and the 18 potential cytotoxicity observed is self-limiting.</p> <p>19 What do you mean by "self-limiting"?</p> <p>20 MR. THOMAS: Object to the form of 21 the question; scope.</p> <p>22 Have you established that he wrote 23 this part?</p> <p>24 MR. THORNBURGH: He said -- I thought 25 he said it was cut and pasted from something he</p>	<p>1 is one of the topics, and cytotoxicity comes within 2 that topic.</p> <p>3 MR. THORNBURGH: Okay.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. Now, sir, I know that you're here. 6 You've been designated by Ethicon as a company 7 spokesperson to discuss this issue.</p> <p>8 Were you the person who wrote this 9 section of the biocompatibility testing results?</p> <p>10 A. I'm not certain, but it's likely.</p> <p>11 Q. And you wrote that: The long history 12 of safe clinical use of polypropylene as mesh in 13 suture products suggest strongly that the material 14 is inherently biocompatible and that the potential 15 cytotoxicity observed is self-limiting.</p> <p>16 What did you mean by "self-limiting"?</p> <p>17 A. Not progressive beyond the 18 implantation period. Something that's not likely to 19 exacerbate a tissue reaction response.</p> <p>20 Q. You'd agree with me that 21 cytotoxicity, even at the implant level, could 22 increase the inflammatory response, right?</p> <p>23 MR. THOMAS: Object to the form of 24 the question.</p> <p>25 THE WITNESS: Yes. If there's death</p>

## Confidential - Subject to Protective Order

Page 459	Page 461
<p>1 of cells, and it's simply cytotoxicity, if there's  2 death of cells in the tissue surrounding the  3 implant, it's very likely to increase the tissue  4 reaction.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. And some of the symptoms that you  7 would expect to see if a mesh material or the  8 additives in the mesh material were cytotoxic would  9 be delayed wound healing and ulcerations, correct?</p> <p>10 A. Well, certainly delayed wound healing  11 and increased tissue reaction.</p> <p>12 The relationship to ulceration is not  13 a direct one. It doesn't usually happen. However,  14 it can occur in some animal studies because of the  15 nature of animals. But the two key endpoints would  16 be increased tissue reaction and delayed wound  17 healing response.</p> <p>18 Q. And in the actions animal section of  19 the IFU --</p> <p>20 MR. THOMAS: What page are we,  21 please?</p> <p>22 MR. THORNBURGH: ETH.MESH.1515 of the  23 exhibit, 2105.</p> <p>24 BY MR. THORNBURGH:</p> <p>25 Q. In the action section in the animal</p>	<p>1 information as you see here, and they made the  2 judgment. I am not sure how -- how that went, where  3 it went, and where they went to get information, but  4 they had access to this information.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. And that's despite the fact that your  7 study showed the potential, at least in vitro, for  8 cytotoxicity, correct?</p> <p>9 MR. THOMAS: Object to the form of  10 the question.</p> <p>11 THE WITNESS: Yes. Yes. And at the  12 same time, as I've indicated here, they've relied on  13 clinical data in ETH.MESH.00371546 to address any  14 potential in vivo cytotoxicity by talking about  15 their experience in the field.</p> <p>16 BY MR. THORNBURGH:</p> <p>17 Q. In fact, I'm going to go ahead and --  18 I am going to give you what's been premarked as  19 T-3185.</p> <p>20 Who's Cary Linsky?</p> <p>21 A. I think he was the project leader for  22 TTV original.</p> <p>23 MR. THOMAS: Just for the record,  24 this is marked 3186?</p> <p>25 MR. THORNBURGH: I'm sorry. Yes.</p>
<p style="text-align: center;">Page 460</p> <p>1 section of the IFU, there is no disclosure to  2 physicians that there is evidence in vitro tests of  3 cytotoxicity associated with the Prolene mesh in  4 TTV, correct?</p> <p>5 MR. THOMAS: Object to the form of  6 the question; scope.</p> <p>7 THE WITNESS: I don't see it here,  8 but as I indicated before, for end users -- and,  9 again, this is not a preclinical document.</p> <p>10 Preclinical folks provide information for the people  11 responsible for this document.</p> <p>12 But in the absence of increased  13 tissue reaction and in the absence of impact on  14 wound healing, there's no need to put additional  15 information in the action section. So that would be  16 my recommendation. And, again, it's the clinicians  17 and regulatory folks who make the final call.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. Did you make that recommendation --  20 did Ethicon make that recommendation or did you make  21 that recommendation to the individuals who were  22 deciding on what language goes into the IFU?</p> <p>23 MR. THOMAS: Object to the form of  24 the question.</p> <p>25 THE WITNESS: I provided the</p>	<p style="text-align: center;">Page 462</p> <p>1 Premarked Exhibit 3186.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. And this is dated 9/11/97, correct?</p> <p>4 A. Yes.</p> <p>5 Q. And this discusses how there was a  6 decision to delay the TTV device from August to  7 September as a result of the cytotoxicity results  8 from NAMSA, correct?</p> <p>9 MR. THOMAS: Object to the form of  10 the question; scope.</p> <p>11 THE WITNESS: I would have to read  12 this document. I've not seen this before.</p> <p>13 Yeah. I see that. I totally agree.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. It says: The TTV data is vitally  16 important for two reasons. It is the only  17 functionality data we have, i.e., no animal studies.  18 Two, the toxicity position paper draft heavily  19 relies on the clinical data to place in perspective  20 the cytotoxicity profile of the device.</p> <p>21 For the above reasons, we need to  22 have good assurance for the integrity of the data  23 that we put into our submission.</p> <p>24 Do you see that?</p> <p>25 A. Yeah, absolutely. I totally agree.</p>

## Confidential - Subject to Protective Order

Page 463	Page 465
<p>1       Q. Okay. So there was already a 2       toxicity position paper that was drafted before the 3       clinical data was even available? 4            MR. THOMAS: Object to the form of 5       the question; scope. 6            BY MR. THORNBURGH: 7        Q. Right? 8        A. Well, the toxicity position paper is 9       independent of any clinical data. It was based on a 10       compilation of all the cytotoxicity studies that 11       were conducted previous to the 510(k) submission and 12       for the 510(k) submission. 13       So that happens -- that's a 14       preclinical issue that happens independent of 15       clinical. 16       Q. And the clinical data that Ethicon 17       was waiting on before submitting the 510(k) 18       submission with your biocompatibility assessment was 19       the Scandinavian multi-center trial, right? 20       MR. THOMAS: Object to the form of 21       the question; scope. 22       THE WITNESS: Yes. That's what it 23       says. They need to finalize that data. 24       MR. THOMAS: Wait a minute. He's 25       asking you whether you know this, not what you're</p>	<p>1            MR. THOMAS: Object to the form of 2       the question; scope. 3            THE WITNESS: No, I do not know that. 4            BY MR. THORNBURGH: 5        Q. Do you know how much money -- what 6       the financial interest was for Ulmsten, who was the 7       inventor of TTV, that the results would be 8       favorable? 9            MR. THOMAS: Object to the form of 10       the question. 11            THE WITNESS: No, I do not. 12            MR. THOMAS: Scope. 13            BY MR. THORNBURGH: 14        Q. Do you know how much Ethicon was 15       paid, or are you prepared to testify how much 16       Ethicon paid to Ulmsten throughout the years for 17       positive results in the Scandinavian multi-center 18       trial? 19            MR. THOMAS: Object to the form of 20       the question; scope. 21            THE WITNESS: I have no knowledge of 22       that information. 23            BY MR. THORNBURGH: 24        Q. I've just handed your counsel 25       opposite an exhibit marked as 2254.</p>
Page 464	Page 466
<p>1       reading off the paper. 2       THE WITNESS: No, I'm reading it. 3       MR. THOMAS: Okay. Because if he's 4       going to be a corporate representative, he's not 5       prepared on this, and this is not part of his 6       designation. So if you want to -- 7       MR. THORNBURGH: He refers to -- part 8       of the designation is the biocompatibility 9       assessments. And he -- he just deferred to the 10       clinical data available to support the non-cytotoxic 11       effect or the self-limiting effect of the 12       cytotoxicity in the TTV material. 13       So if that's a position he just took, 14       then I ought to have an opportunity to cross-examine 15       him on that issue. 16       MR. THOMAS: We've told you what he 17       has prepared to talk about cytotoxicity. This goes 18       well beyond it. I am not going to argue with you. 19       You ask your questions, but -- 20       BY MR. THORNBURGH: 21       Q. Before I do, are you aware of how 22       much money -- strike that. 23       Are you aware that Dr. Ulmsten was 24       the primary clinical researcher in the Scandinavian 25       multi-center trial?</p>	<p>1            MR. THORNBURGH: I have a copy for 2       you, Counsel. 3            MR. THOMAS: This is the version that 4       you've already highlighted? 5            MR. THORNBURGH: Yes, sir. 6            (Document marked for identification 7       as Exhibit T-2254.) 8            MR. THOMAS: Did you say 2254? 9            Thank you. 10          BY MR. THORNBURGH: 11          Q. Have you seen this document before? 12          A. Yes. 13          Q. And this is a Prolene suture to which 14       surface additives had been applied or evaluated to 15       determine their tissue response characteristic in 16       rat gluteal muscles at three, 14, and 28 days post 17       implantation. Do you see that? 18          A. Yes. 19          Q. And the finding from this study is 20       that two of the additives, Lubrol PX and Santonox 21       R -- those are antioxidants, correct? 22          A. Yes. 23          Q. And those antioxidants, as you 24       testified previously, can leach out of the Prolene 25       mesh, correct?</p>

## Confidential - Subject to Protective Order

Page 467	Page 469
<p>1        A. Yes.</p> <p>2        Q. And this study found that two of the 3        additives, Lubrol PX and Santonox R, elicit tissue 4        responses significantly greater than controls. Do 5        you see that?</p> <p>6        A. Yes.</p> <p>7        Q. Did Ethicon disclose in the 510(k) 8        submission that the antioxidants that leach out of 9        their mesh when tested against negative controls 10       elicited a tissue response that was significantly 11       greater?</p> <p>12       MR. THOMAS: Object to the form of 13       the question; scope.</p> <p>14       BY MR. THORNBURGH:</p> <p>15       Q. Doctor?</p> <p>16       A. Let me just read the comments 17       section.</p> <p>18       Okay. This is an exploratory study 19       where they coated the Prolene suture which already 20       contains additives, but with additional additives on 21       the surface.</p> <p>22       Q. To mimic leaching, right?</p> <p>23       A. No, to load up the suture with some 24       components of the antioxidant package to see if 25       there had been any impact on tissue reaction.</p>	<p>1        MR. THORNBURGH: Move to strike.</p> <p>2        BY MR. THORNBURGH:</p> <p>3        Q. We're going to discuss the 28-day 4        study, but my question is: Was the Lubrol and the 5        Santonox R -- will leach out of the mesh fibers, 6        correct?</p> <p>7        MR. THOMAS: Object to the form of 8        the question.</p> <p>9        THE WITNESS: Yes. I've already 10       admitted that these agents can leach out. This 11       experiment is not relevant to that question.</p> <p>12       BY MR. THORNBURGH:</p> <p>13       Q. Well, this experiment does show that 14       Lubrol and Santonox can elicit a greater tissue 15       response, correct?</p> <p>16       A. Only when smeared on the surface of a 17       Prolene suture.</p> <p>18       Q. Now, you talk about the 28-day study. 19       Before we go there, I just have a couple questions 20       for you about that, that I want to get my hands 21       around.</p> <p>22       The 28-day study that you are 23       referring to is a study that compared Prolene flat 24       mesh raw material to the TTVT finished product, 25       correct?</p>
Page 468	Page 470
<p>1        Q. And the finding was that there was an 2       impact on tissue reaction. There was, in fact, a 3       significantly greater reaction in the controls, 4       correct?</p> <p>5        A. Yes, that's the case, but it's not 6       relevant to Prolene suture or Prolene mesh, because 7       the Prolene suture and Prolene mesh is not coated 8       with additional additives like what was done in this 9       experiment.</p> <p>10       So it's an exploratory study to 11       understand irritant potential of various 12       antioxidants, but it has no relevance to current 13       production products, the suture or mesh.</p> <p>14       Q. Well, with all due respect, sir, the 15       Lubrol and the Santonox R will leach out of the mesh 16       fibers, correct?</p> <p>17       A. It's possible that they will leach 18       out of the mesh fibers. I think they do. As I've 19       indicated, there's evidence for that.</p> <p>20       At the same time, I've also indicated 21       that in the 28-day Prolene mesh TTVT mesh experiment, 22       there was no increased evidence of tissue reaction 23       indicating that if any of the additives were to 24       leach away, it had no impact on the surrounding 25       tissues.</p>	<p>1        A. As I recall, that was Prolene flat 2       mesh finished goods, the final product, compared to 3       TTVT mesh, final product.</p> <p>4        Q. Which would have also contained 5       Santonox R and Procol and Lubrol, correct?</p> <p>6        A. Yes.</p> <p>7        Q. Okay. So you tested a mesh device 8       that already had additives in it to another mesh 9       device which already had additives in it, correct?</p> <p>10       A. Yes, that's right, the difference 11       being that the Prolene flat mesh is not cytotoxic in 12       vitro, and the TTVT mesh is cytotoxic in vitro.</p> <p>13       Q. Now, I hear what you're saying, that 14       there were studies done of the Prolene flat mesh, 15       not the TTVT, but the Prolene flat mesh used in 16       hernia repair, that tested negative for 17       cytotoxicity; is that what you're saying?</p> <p>18       A. Yes. The same Prolene mesh that's in 19       TTVT mesh was negative.</p> <p>20       Q. Was there a NAMSA Elution test done 21       in that set of studies similar to the Elution test 22       that was done in the TTVT product which found 23       moderate to severely -- severe cytotoxicity?</p> <p>24       A. We'd have to look at the individual 25       studies in the 510(k), and the summaries may be</p>

## Confidential - Subject to Protective Order

Page 471	Page 473
<p>1 sufficient here, but I might need to go to the full  2 study reports in the binders that we've brought.  3 But let me take a look.</p> <p>4 On ETH.MESH.00371569, there is a  5 summary of the study that I am making reference to.  6 In fact, two studies were conducted with the normal  7 production Prolene flat mesh.</p> <p>8 Q. And can you give me -- I don't have  9 your binder.</p> <p>10 MR. THOMAS: He's testified from your  11 exhibit.</p> <p>12 THE WITNESS: Yeah. It's your  13 exhibit.</p> <p>14 MR. THOMAS: It's the 510(k).  15 2105.</p> <p>16 THE WITNESS: ETH.MESH.00371568.  17 BY MR. THORNBURGH:</p> <p>18 Q. 15 --</p> <p>19 A. 1568 and 1569. These were the  20 cytotoxicity studies conducted with Prolene flat  21 mesh. But one, an agarose overlay, was  22 non-cytotoxic, as it was for the TVT flat mesh.  23 What you're referring to is the  24 second study on Page 65 of that. That's  25 ETH.MESH.00371569. This is a filter paper method, a</p>	<p>1 mechanisms of cytotoxicity and a summary of the  2 tests that were performed by Ethicon, correct?  3 A. Yes.  4 Q. And this says that: As part of the  5 overall assessment of biocompatibility of the TTVT  6 device, a number of cytotoxicity studies were  7 conducted. Right?  8 A. Yes.  9 Q. And it goes on to say: After an  10 evaluation of all the test results, only the  11 polypropylene mesh component of the sterile TTVT  12 device was considered to be cytotoxic, and the  13 severity was moderate to severe.  14 Do you see that?  15 A. Yes.  16 Q. In the ISO Elution testing using USP  17 scoring system as slight, mild moderate, and severe.  18 Now, what does it mean to be  19 moderately cytotoxic in terms of the number of cells  20 that will die when they come into contact with the  21 offending agent?  22 A. Yeah. I -- I know in -- I could pull  23 up the study to find the detail.  24 MR. THOMAS: If you need to do that,  25 do that. If you want that detail --</p>
<p style="text-align: center;">Page 472</p> <p>1 little bit different than the ISO Elution method.  2 The ISO Elution method is taking an  3 extract of the mesh and put it into contact with  4 cells. In this case -- and it's a cytotoxicity  5 assay that's commonly conducted for medical devices.  6 In this case, an extract is placed on  7 a filter paper, which is then placed on an agarose  8 overlay. And in that study, the test article was  9 non-cytotoxic.  10 Q. That was a different method?  11 A. Slightly different. Slightly  12 different, but very similar in that both used  13 extracts, such that if there were leachables from  14 the device, they would have gone into the extract  15 and either the extract placed in contact with the  16 cells or the extract pipetted onto filter paper put  17 onto cells. Similar, but they're different.  18 MR. THORNBURGH: Move to strike,  19 nonresponsive, after they're slightly different.  20 BY MR. THORNBURGH:  21 Q. I'll hand you what has been premarked  22 as T-2132, which is a document draft entitled  23 "Mechanisms Of Cytotoxicity In TTVT Polypropylene  24 Mesh."  25 Now, this is a discussion of the</p>	<p style="text-align: center;">Page 474</p> <p>1 THE WITNESS: Actually, let me get  2 that detail. Let me look at a cytotoxicity study as  3 an example.  4 BY MR. THORNBURGH:  5 Q. Well, just hold on a second. You  6 don't know right now sitting here from your memory  7 what the USP scoring system says concerning the  8 number of cells that will die when they come into  9 contact with the cytotoxic agent?  10 MR. THOMAS: Object to the form of  11 the question. That's why he's prepared with all  12 these notebooks, because he can't remember  13 everything.  14 MR. THORNBURGH: Well --  15 MR. THOMAS: So if you want the  16 answer to the question, he's going to consult the  17 study.  18 MR. THORNBURGH: Number 4 on  19 leaching.  20 MR. THOMAS: Do you want him to look  21 at it?  22 BY MR. THORNBURGH:  23 Q. You're going to pull up some study.  24 I'm asking what under the USP system, right?  25 It's greater than 50 percent of the</p>

## Confidential - Subject to Protective Order

Page 475	Page 477
<p>1    cells, right?</p> <p>2            MR. THOMAS: He'll check here and 3    make sure.</p> <p>4            THE WITNESS: For a moderate 5    response, not more than 70 percent of the cells 6    would be rounded and/or lysed, which would be 7    evidence of cytotoxicity.</p> <p>8            I should point out that a mild 9    response, which is acceptable, results in not more 10   than 50 percent of the cells having evidence of 11   cytotoxicity.</p> <p>12   BY MR. THORNBURGH:</p> <p>13        Q. So at moderate cytotoxicity, up to 14   70 percent of the cells die that come into contact 15   with the offending agent, correct?</p> <p>16        A. Yes.</p> <p>17        MR. THOMAS: Object to the form of 18   the question.</p> <p>19        THE WITNESS: Yes. That's in 20   accordance with the scheme. Not more than 70. So 21   between 50 and 70.</p> <p>22   BY MR. THORNBURGH:</p> <p>23        Q. Okay. And for severe cytotoxicity, 24   70 to 100 percent of the cells that come into 25   contact with the offending agent die, correct?</p>	<p>1    characterization person, Mr. or Mrs. Rippy?</p> <p>2        A. If it was finalized, it would have 3    gone to her, as well as the distribution on the 4    page.</p> <p>5        Q. That's what I'm -- I am trying to 6    understand.</p> <p>7            Do you know if this information was 8    ever provided to the product characterization 9    person, Mr. or Mrs. Rippy?</p> <p>10        Is it Mr. or Mrs?</p> <p>11        A. Marian.</p> <p>12        I do not know that. A finalized copy 13   has not been located.</p> <p>14        Q. Do you know what her responsibility 15   was as the corporate product characterization person 16   at Ethicon?</p> <p>17        A. She was the director of the group 18   that included a biocompatibility surgical 19   functionality, laboratory animal resources, product 20   performance evaluation, and materials 21   characterization.</p> <p>22        Q. And that role is important in 23   understanding the -- for future reference, 24   understanding the safety and biocompatibility of 25   Ethicon's products, correct?</p>
<p style="text-align: center;">Page 476</p> <p>1        A. Yes.</p> <p>2            MR. THOMAS: Object to the form of 3    the question.</p> <p>4   BY MR. THORNBURGH:</p> <p>5        Q. And under the testing conducted by 6   NAMSA of the TVT finished product, between 50 and a 7   hundred percent of the cells that came into contact 8   died, right?</p> <p>9        A. That's correct.</p> <p>10       Q. Now, in your mechanism of -- this is 11   your draft, right? This is your -- you wrote this; 12   is that correct?</p> <p>13       A. Yes, that's correct.</p> <p>14       Q. And so you discuss -- who's M. Rippy?</p> <p>15       A. She was a director of corporate 16   product characterization at that time.</p> <p>17       Q. Director of corporate product?</p> <p>18       A. Corporate product characterization.</p> <p>19       That was the preclinical sciences group.</p> <p>20       Q. Was there ever a final? Because I 21   could only find the draft.</p> <p>22       A. No, I don't have a final. I have not 23   been able to locate a final signed copy.</p> <p>24       Q. Did you ever provide or did Ethicon 25   ever provide this document to the corporate product</p>	<p style="text-align: center;">Page 478</p> <p>1        A. Yes. She was the leader of the 2   group.</p> <p>3        Q. Now, it says additional studies were 4   conducted -- it goes on to say there was another -- 5   it says: However, cytotoxicity of the testing of 6   the polypropylene raw material also used in the 7   manufacture of Prolene indicated that it was 8   non-cytotoxic.</p> <p>9            One thing we've established is that 10   both of those -- both of those products contained 11   Santonox and Lubrol, which we've seen are cytotoxic, 12   or cause an increase in tissue response, correct?</p> <p>13       A. The Santonox R was. And I think 14   there may have been a change from Lubrol to 15   Santonox R because of a change in supplier.</p> <p>16       Q. I think there was a change in Lubrol 17   to Procol. Right?</p> <p>18       A. Well, no. I think the Procol LA-10 19   was a non-ionic surfactant. It was a processing 20   aid, I believe.</p> <p>21            And so it was the antioxidant, 22   Santonox R and Procol LA-10 that had the most 23   potential for in vitro cytotoxicity.</p> <p>24       Q. All right. And you discuss -- you go 25   on to discuss: Additional studies were conducted to</p>

## Confidential - Subject to Protective Order

Page 479	Page 481
<p>1 better understand the nature of the cytotoxic  2 potential of the polypropylene mesh under different  3 conditions. Individual components of the  4 polypropylene resin additive package used in the  5 manufacture of the mesh were also evaluated to  6 determine if any single additive might be  7 contributing to the cytotoxic potential of the  8 material.</p> <p>9 Now, you say cytotoxic testing of the  10 polypropylene mesh from this device was -- resulted  11 in severe cytotoxicity.</p> <p>12 Do you see that study, 196?</p> <p>13 Hang on. Let me put it into context  14 so that we're -- we look at this entire document.</p> <p>15 Since there was the possibility of  16 the use of localized high temperature during  17 application of the heat shrink tubing might be  18 contributing to the cytotoxicity of the  19 polypropylene mesh, a study was conducted using low  20 temperature heat shrink tubing to manufacture the  21 TTVT device.</p> <p>22 And so you're able to rule out the  23 use of the high shrink tubing as the cause for  24 cytotoxicity, because when you used low temperature  25 shrink tubing to manufacture the TTVT device, the</p>	<p>1 Q. Were you concerned that using a heat  2 shrink tubing -- that that additional heat that's  3 applied could cause the additives to leach to the  4 surface of the Prolene mesh?</p> <p>5 A. You would call that blooming. In the  6 package, it would be a blooming of those additives  7 of the surface, where in the body, it would be a  8 leaching.</p> <p>9 That was the -- that was the  10 hypothesis at the time.</p> <p>11 Q. And so even with the low and high  12 tubing process, there's still heat being applied  13 which could cause additives to bloom to the surface  14 of the mesh, correct?</p> <p>15 A. That's correct.</p> <p>16 Q. And you go on to say: Cytotoxicity  17 testing of the finished nonsterile TTVT device  18 resulted in slight cytotoxicity, which met USP  19 acceptability criteria.</p> <p>20 You go on to say: The material  21 safety data sheet for the individual component of  22 polypropylene resin additive package used to  23 stabilize the polypropylene mesh were evaluated, and  24 ISO Elution cytotoxicity testing was conducted for  25 some of them, using maximum concentrations of these</p>
<p style="text-align: center;">Page 480</p> <p>1 studies confirmed again that there was severe  2 cytotoxicity in the polypropylene mesh, correct?</p> <p>3 MR. THOMAS: Object to the form of  4 the question.</p> <p>5 THE WITNESS: Yeah. You would  6 conclude that there was either no impact or the heat  7 applied even to the low temperature heat shrink  8 tubing was insufficient.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Okay. Now, we know from two tests,  11 that it's still the TTVT mesh that is cytotoxic,  12 right, not the process of the heat being applied to  13 the heat shrink tubing, correct?</p> <p>14 MR. THOMAS: Object to the form of  15 the question.</p> <p>16 THE WITNESS: Well, there's still  17 some heat to shrink a low temperature heat shrink  18 tubing, but not as high as for a higher temperature  19 heat shrink tubing.</p> <p>20 So that's directional information,  21 and it's -- the relevance, obviously, is that it's  22 uncertain. There's still temperature added, but,  23 apparently, it's sufficient to cause an in vitro  24 cytotoxicity result.</p> <p>25 BY MR. THORNBURGH:</p>	<p style="text-align: center;">Page 482</p> <p>1 materials added to the resin, and then, if  2 necessary, at the concentration of these chemicals  3 which could be extracted from the polypropylene  4 resin by water --</p> <p>5 MR. THOMAS: By mesh.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. -- polypropylene mesh by water at  8 37 degrees Celsius for 24 hours to mimic the  9 cytotoxicity extraction conditions. Right?</p> <p>10 A. That's exactly right.</p> <p>11 Q. All right. And you talk about  12 another antioxidant, which is DLTD, was tested and  13 found to be non-cytotoxic, right?</p> <p>14 A. Yes.</p> <p>15 Q. And Santonox R, another antioxidant  16 was tested 3 milligrams per milliliter and resulted  17 in severe cytotoxicity, right?</p> <p>18 A. Yes.</p> <p>19 Q. And then you ran that test again with  20 a lower volume of Santonox, which resulted from  21 aqueous extraction of the polypropylene mesh, right?</p> <p>22 A. Yes.</p> <p>23 Q. And found no cytotoxicity when you  24 lowered the level?</p> <p>25 A. Yes. This would be a level to</p>

## Confidential - Subject to Protective Order

Page 483	Page 485
<p>1 approximate what might come out after extracting the  2 mesh in the manner for the original cytotoxicity  3 work. So this would -- you would conclude here that  4 Santonox R is not the element that is contributing  5 to in vitro cytotoxicity.</p> <p>6 Q. Santonox at .2 milligrams per  7 milliliter was found to be non-cytotoxic, right?</p> <p>8 A. Yes. Yes, that's correct.</p> <p>9 Q. Santonox at 6 milligrams per  10 milliliter was -- Santonox at 3 milligrams per  11 milliliter was cytotoxic, right?</p> <p>12 A. Yes, and probably as much as could be  13 dissolved in water. It's relatively nonpolar. So  14 this is the maximum amount that could be  15 solubilized.</p> <p>16 Then the second attempt was to  17 approximate what might come out under actual  18 extraction conditions, such that would occur as in a  19 cytotoxicity study.</p> <p>20 Q. And then you went on and tested  21 Procol LA-10.</p> <p>22 Do you understand that Procol and  23 Lubrol are essentially the same antioxidant agent?</p> <p>24 MR. THOMAS: Object to the form of  25 the question.</p>	<p>1 BY MR. THORNBURGH:  2 Q. We'll probably look at the e-mail  3 first, because attached is a copy of J. Karl's memo.  4 Who's J. Karl; do you know?  5 A. John Karl.  6 Q. And what was his position at Ethicon?  7 A. Polymer engineer.  8 Q. Okay. And J. Karl's memo indicating  9 the R&amp;D specifications for the various additives  10 used in Prolene resin.  11 A. I've seen this.  12 Q. It says: If there is any  13 biocompatibility and/or safety documentation for  14 Prolene, it should have addressed the additives and  15 made some worst case estimates.  16 Do you see that?  17 A. Yes.  18 Q. Then there was a memo attached from  19 John Karl, an engineering fellow at Ethicon, who  20 does an in-depth discussion of really the history of  21 Prolene and the manufacturing process.  22 You've read this document before,  23 right?  24 A. Yes, I've seen this.  25 MR. THOMAS: When you're talking</p>
<p style="text-align: center;">Page 484</p> <p>1 THE WITNESS: I didn't appreciate  2 that, but...</p> <p>3 BY MR. THORNBURGH:  4 Q. You don't know that?  5 MR. THOMAS: Object to the form of  6 the question; scope.</p> <p>7 THE WITNESS: No. I know it as a  8 Procol LA-10 here.</p> <p>9 BY MR. THORNBURGH:  10 Q. Before you came here today -- before  11 you came here today, had you seen this document  12 authored by Dan Burkley dated February of 2003?</p> <p>13 MR. THOMAS: May I have a copy of it,  14 please?</p> <p>15 MR. THORNBURGH: I'm sorry. We'll go  16 ahead and mark it as an exhibit.</p> <p>17 BY MR. THORNBURGH:  18 Q. It's been premarked as T-305.  19 Is this the first time that you've  20 seen this document?</p> <p>21 MR. THOMAS: Are you talking about  22 the e-mail or --</p> <p>23 MR. THORNBURGH: The e-mail and the  24 document attached to it.</p> <p>25 MR. THOMAS: Separate documents.</p>	<p style="text-align: center;">Page 486</p> <p>1 about this document, you are talking about the  2 e-mail and the memo?  3 MR. THORNBURGH: I am talking about  4 the memo -- the memo attached, which is  5 ETH.MESH.02268619, dated January 23, 2003 addressed  6 to Dan -- Mr. Dan Burkley at Ethicon from a Mr. John  7 Karl, engineering fellow from Ethicon.  8 BY MR. THORNBURGH:  9 Q. You've seen this before, right?  10 A. I've seen the memo you've pointed  11 out. I don't believe I've seen the e-mail on the  12 first page.  13 Q. Sure. It talks about how Ethicon had  14 basically obtained the Prolene mesh from Montecatini  15 Company. Did I pronounce that correctly?  16 A. I don't know. That was well before  17 my time.  18 Q. Okay. It goes through, really, the  19 in-depth background. We don't need to cover it all.  20 But it does talk about how Prolene -- how Ethicon  21 came to purchase Prolene from the original company,  22 which was Montecatini, in it looks like New York --  23 it looks like the offices were in New York City.  24 He goes on and talks about their  25 plant in West Virginia. And it goes on and talks</p>

## Confidential - Subject to Protective Order

Page 487	Page 489
<p>1 about some of the changes in the company, of the  2 polypropylene resin was still being sold to Ethicon  3 from these various companies throughout the years.  4 A. Yeah. I think the original supplier  5 was the Novo Mont plant, as I read this document.  6 And they came from -- apparently, they bought the  7 resources of Montecatini.  8 Q. It goes on to say: The objective to  9 every polymer resin run has been to duplicate the  10 original formulation as exactly possible, warts and  11 all.  12 Do I read that correctly?  13 A. Yes.  14 Q. Do you know what warts Ethicon  15 continued to include in their Prolene resin and  16 manufacture of the TVT devices?  17 MR. THOMAS: Object to the form of  18 the question; scope.  19 THE WITNESS: No, although I think  20 that knowing John, I think what he was saying was  21 we're going to keep this original formulation as it  22 is.  23 BY MR. THORNBURGH:  24 Q. No matter what bad things are  25 associated with it, right?</p>	<p>1 Lubrol and using the polypropylene form -- from a  2 continuous reactor versus the original batch  3 reactor.  4 Do you see that?  5 A. Yes.  6 Q. It says: We substituted Procol LA-10  7 for Lubrol solely because the Lubrol became no  8 longer available. However, prior to consummating  9 the substitution, we validated that the Procol was  10 the same material as the Lubrol but from a different  11 vendor.  12 Do you see that?  13 A. Yes. That's my understanding.  14 Q. Okay. So does that help you  15 understand that the Lubrol and the Procol are really  16 the same thing, just from a different vendor?  17 A. Okay. Thanks, Dan, for that  18 clarification.  19 Q. Okay. And it goes on to say the  20 added -- it goes on and lists the additives that  21 were added.  22 It says: The additive package in use  23 today is the same as was used in the original  24 formulation from years ago with the two exceptions  25 noted above.</p>
<p style="text-align: center;">Page 488</p> <p>1 MR. THOMAS: Object to the form of  2 the question; scope.  3 THE WITNESS: I can't put words in --  4 we have to think through where he's going with this.  5 And that is -- and I've made this statement before.  6 And that is we need to maintain the original  7 formulation because we're accumulating a large  8 database of preclinical and clinical experience that  9 demonstrates the safety and functionality of this  10 product.  11 BY MR. THORNBURGH:  12 Q. Long-term clinical data from folks  13 like the Scandinavian folks, who were paid \$400,000,  14 as long as they -- the adverse events didn't change  15 in their follow-up studies, correct?  16 MR. THOMAS: Object to the form of  17 the question; scope.  18 THE WITNESS: Well, no. I was  19 thinking of the beginnings of Prolene suture in  20 1965.  21 BY MR. THORNBURGH:  22 Q. In any case, they continued to  23 manufacture the same Prolene resin, warts and all.  24 No changes have ever been made in the chemistry with  25 the exception of substituting Procol LA-10 for</p>	<p style="text-align: center;">Page 490</p> <p>1 In addition, 1991, the Santonox  2 levels were reduced slightly. Santonox is an  3 antioxidant that protects the resin from thermal  4 oxidation during extrusion.  5 So you see, actually, in 1991, after  6 the ten-year dog study was started, that Santonox,  7 an antioxidant, was actually reduced from the resin.  8 Do you see that?  9 MR. THOMAS: Object to the form of  10 the question.  11 THE WITNESS: I see the statement.  12 BY MR. THORNBURGH:  13 Q. So the -- the Prolene resin that was  14 used in the ten-year study by Ethicon actually had  15 less antioxidants in it than the sutures that are --  16 strike that.  17 According to this document, the  18 history is correct. The Prolene sutures that were  19 in the study conducted by Dan Burkley, the ten-year  20 study, had more antioxidants than current production  21 TTVT, right?  22 MR. THOMAS: Object to the form of  23 the question; scope.  24 THE WITNESS: It says they were  25 reduced slightly.</p>

## Confidential - Subject to Protective Order

Page 491	Page 493
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. So there's less Santonox R in the</p> <p>3 Prolene polypropylene to protect against oxidation</p> <p>4 than existed prior to 1991, right?</p> <p>5 MR. THOMAS: Object to the form of</p> <p>6 the question; scope. This is not a designation for</p> <p>7 him at all.</p> <p>8 MR. THORNBURGH: Well, he was</p> <p>9 designated as the person to talk about degradation</p> <p>10 and degradation studies, so I think it's important</p> <p>11 for him to understand that --</p> <p>12 MR. THOMAS: I am not going to argue</p> <p>13 with you.</p> <p>14 MR. THORNBURGH: -- the ten-year data</p> <p>15 had more antioxidants in it than -- than the TVT</p> <p>16 mesh. Yet, it still showed surface degradation.</p> <p>17 Right?</p> <p>18 MR. THOMAS: You're just not going to</p> <p>19 establish that through this witness. He's not been</p> <p>20 designated as a corporate representative on the</p> <p>21 chemical composition of the mesh.</p> <p>22 MR. THORNBURGH: He has been</p> <p>23 designated for degradation. He's been designated as</p> <p>24 the person who will discuss --</p> <p>25 MR. THOMAS: I'm not going to argue</p>	<p>1 MR. THOMAS: Object to the form of</p> <p>2 the question; scope.</p> <p>3 THE WITNESS: This would indicate</p> <p>4 that.</p> <p>5 It also indicates that when this</p> <p>6 minor change was made, the suture extrusion</p> <p>7 processes were fully validated to demonstrate that</p> <p>8 no adverse effect on the suture properties resulted</p> <p>9 from this change.</p> <p>10 MR. THORNBURGH: Move to strike;</p> <p>11 nonresponsive.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. There wasn't even another question</p> <p>14 pending. You've got to wait for me to ask a</p> <p>15 question.</p> <p>16 You were designated as the person</p> <p>17 regarding the additives and leaching, right?</p> <p>18 MR. THOMAS: No.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. Leaching of additives, right?</p> <p>21 MR. THOMAS: Leaching, period.</p> <p>22 THE WITNESS: I understand that I am</p> <p>23 to address biocompatibility issues related to</p> <p>24 leachables, both in terms of local tissue reaction</p> <p>25 and any impact on cytotoxicity.</p>
<p style="text-align: center;">Page 492</p> <p>1 with you.</p> <p>2 MR. THORNBURGH: -- the, you know,</p> <p>3 biocompatibility of this mesh.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. So according to this document, you'd</p> <p>6 have to agree it's based on this document and based</p> <p>7 on what you have seen, the ten-year study, that</p> <p>8 showed surface degradation in the Prolene sutures</p> <p>9 that were tested had greater antioxidants to protect</p> <p>10 against oxidation than current TVT?</p> <p>11 MR. THOMAS: Object to the form of</p> <p>12 the question.</p> <p>13 BY MR. THORNBURGH:</p> <p>14 Q. That's what this document would</p> <p>15 suggest, right?</p> <p>16 MR. THOMAS: Excuse me. You've asked</p> <p>17 about three questions and haven't let him answer any</p> <p>18 of them. Do you want to start over again? Which</p> <p>19 question do you want him to answer?</p> <p>20 Excuse me. Stop. Just --</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. According to this document, the</p> <p>23 sutures that were tested by Dan Burkley in the</p> <p>24 ten-year data would have more antioxidants than the</p> <p>25 antioxidants in the TVT, correct?</p>	<p style="text-align: center;">Page 494</p> <p>1 BY MR. THORNBURGH:</p> <p>2 Q. And this would indicate that one of</p> <p>3 the antioxidant additives, Santonox R, which -- do</p> <p>4 you have an understanding that Santonox R is used to</p> <p>5 prevent oxidation during the manufacturing of the</p> <p>6 Prolene meshes?</p> <p>7 A. I've answered all that I can answer</p> <p>8 about this line of questioning. A polymer</p> <p>9 chemist -- need to be discussing these specifics</p> <p>10 with a polymer chemist or an engineer.</p> <p>11 Q. Well, you rely on a lot of studies</p> <p>12 that were conducted prior to -- for your -- for</p> <p>13 your -- the studies related to degradation that</p> <p>14 predate 1991, which show that in 1991, there was a</p> <p>15 reduction of antioxidants in the Prolene suture,</p> <p>16 right?</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question; scope.</p> <p>19 THE WITNESS: That's correct, and at</p> <p>20 the same time, there are plenty of studies conducted</p> <p>21 after 1991 that address these same endpoints.</p> <p>22 MR. THORNBURGH: Move to strike</p> <p>23 everything after, that's correct.</p> <p>24 We've got to change the tape.</p> <p>25 THE VIDEOGRAPHER: We're now going</p>

## Confidential - Subject to Protective Order

Page 495	Page 497
<p>1 off the video record. It's now 2:40.</p> <p>2 This concludes Volume 2, Tape</p> <p>3 Number 3 of the videotape deposition of Dr.</p> <p>4 Thomas A. Barbolt.</p> <p>5 (Short break.)</p> <p>6 THE VIDEOGRAPHER: We're back on the</p> <p>7 video record. It's now 3:00 p.m.</p> <p>8 This begins Tape Number 4, Volume 2</p> <p>9 of the videotaped deposition of Dr. Thomas A.</p> <p>10 Barbolt.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Okay. Dr. Barbolt, before we went</p> <p>13 off the record, we were talking about a change, a</p> <p>14 reduction in the levels of Santonox after 1991. Do</p> <p>15 you remember that?</p> <p>16 A. Yes.</p> <p>17 Q. And this document goes on to say that</p> <p>18 the Santonox is an antioxidant that protects the</p> <p>19 resin from thermal oxidation during extrusion.</p> <p>20 According to this document, the</p> <p>21 Santonox is only there to protect against oxidation</p> <p>22 ex vivo, right?</p> <p>23 MR. THOMAS: Object to the form of</p> <p>24 the question.</p> <p>25 THE WITNESS: I really can't address</p>	<p>1 the question.</p> <p>2 THE WITNESS: That's what it says.</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. And we know from your prior testimony</p> <p>5 that the additives, including Santonox, Lubrol,</p> <p>6 DLTDP, those additives can bloom to the surface of</p> <p>7 the polypropylene sutures and meshes, correct?</p> <p>8 A. Yes, they can.</p> <p>9 Q. And can leach out of the -- out of</p> <p>10 the fibers in vivo, correct?</p> <p>11 A. Yes. I think that's likely.</p> <p>12 Q. It says calcium stearate is another</p> <p>13 additive; DLTDP, an antioxidant to improve long-term</p> <p>14 storage of the resin.</p> <p>15 Do you see that?</p> <p>16 A. Yes.</p> <p>17 Q. So this is an antioxidant used,</p> <p>18 according to this document, used to prevent</p> <p>19 oxidation during the storage of the product,</p> <p>20 correct?</p> <p>21 MR. THOMAS: Object to the form of</p> <p>22 the question.</p> <p>23 THE WITNESS: I see that.</p> <p>24 BY MR. THORNBURGH:</p> <p>25 Q. Again, Santonox R is an antioxidant</p>
<p style="text-align: center;">Page 496</p> <p>1 the intention of the inclusion of the Santonox R as</p> <p>2 an antioxidant, but, clearly, as it's stated, it</p> <p>3 helps prevent oxidation during extrusion from heat,</p> <p>4 but it may have other purposes to protect against</p> <p>5 any other oxidation. Since it's a free radical</p> <p>6 scavenger, that would be its function.</p> <p>7 But short of that, this would be for</p> <p>8 a polymer engineer to address more specifically.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Well, extrusion happens outside the</p> <p>11 body, right?</p> <p>12 MR. THOMAS: Object to the form of</p> <p>13 the question.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. During the manufacturing process?</p> <p>16 MR. THOMAS: Object to the form of</p> <p>17 the question.</p> <p>18 THE WITNESS: Extrusion occurs during</p> <p>19 the manufacturing process.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. So according to this document, the</p> <p>22 Santonox is an antioxidant that protects the resin</p> <p>23 from thermal oxidation during the extrusion</p> <p>24 manufacture process, right?</p> <p>25 MR. THOMAS: Object to the form of</p>	<p style="text-align: center;">Page 498</p> <p>1 to promote stability during compounding and</p> <p>2 extrusion, correct?</p> <p>3 MR. THOMAS: Object to the form of</p> <p>4 the question.</p> <p>5 THE WITNESS: Yes. That's what it</p> <p>6 says.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. And Procol LA is a lubricant to help</p> <p>9 reduce tissue drag and promote tissue passage.</p> <p>10 Do you see that?</p> <p>11 A. Yes.</p> <p>12 MR. THOMAS: Object to the form of</p> <p>13 the question.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. And the SCP pigment is a colorant to</p> <p>16 enhance visibility.</p> <p>17 Do you see that?</p> <p>18 MR. THOMAS: Same objection.</p> <p>19 THE WITNESS: Yes.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. So according to this document, the</p> <p>22 DLTDP and the Santonox are antioxidants used to</p> <p>23 prevent oxidation during either the manufacturing,</p> <p>24 compounding, or storage of the Prolene mesh,</p> <p>25 correct?</p>

## Confidential - Subject to Protective Order

Page 499	Page 501
<p>1                   MR. THOMAS: Object to the form of 2 the question.</p> <p>3                   THE WITNESS: That's what's stated in 4 this document.</p> <p>5 BY MR. THORNBURGH:</p> <p>6                   Q. So let's go back to Exhibit T-2132. 7                   Again, this document is the mechanism 8 of cytotoxicity for TTV polypropylene mesh that we 9 were discussing, which you drafted sometime while 10 you were employed with Ethicon, correct?</p> <p>11                  A. Yes.</p> <p>12                  Q. And we discussed how Santonox R 13 tested severely cytotoxic at 3 milligrams per 14 milliliter, but non-cytotoxic at 2 milligrams per 15 milliliter, right?</p> <p>16                  MR. THOMAS: Object to form. 17                  It's .2 milligrams per milliliter.</p> <p>18                  MR. THORNBURGH: .2 milligrams per 19 milliliter. Thank you, Counsel.</p> <p>20                  THE WITNESS: Yes, that's correct.</p> <p>21 BY MR. THORNBURGH:</p> <p>22                  Q. And you go on to say that the Procol, 23 which is the compound here, is the polyoxyethylene 24 lauryl.</p> <p>25                  Do you see that?</p>	<p>1                   non-cytotoxic polypropylene mesh, Prolene. 2                   The tissue reaction in TTV mesh was 3 characterized generally by mild, chronic 4 inflammation during the 28-day study, which was 5 comparable to the tissue reaction observed for 6 Prolene mesh.</p> <p>7                   Do you see that?</p> <p>8                  A. Yes.</p> <p>9                  Q. That was a short-term study, correct?</p> <p>10                 A. 28-day study. It would be considered 11 short term.</p> <p>12                 Q. And that was a study that looked at 13 inflammatory -- or tissue response differences 14 between two mesh devices, both of which contained 15 blooming and leaching additives, including Procol, 16 correct?</p> <p>17                 A. Yes, but likely to different extents.</p> <p>18                 Q. You're comparing apples to apples -- 19 apples to apples in this experiment, weren't you?</p> <p>20                 A. Apples to apples?</p> <p>21                 MR. THOMAS: Object to the form of 22 the question.</p> <p>23 BY MR. THORNBURGH:</p> <p>24                 Q. Yeah.</p> <p>25                 A. I don't understand.</p>
Page 500	Page 502
<p>1                  A. Yes.</p> <p>2                  Q. And the Procol was tested at 3 3.5 milligrams per milliliter and resulted in severe 4 cytotoxicity.</p> <p>5                  Severe -- so then, you ran another 6 test, reducing the volume of Procol, which again 7 tested severely cytotoxic, correct?</p> <p>8                  A. Yes.</p> <p>9                  Q. And then you reduced it yet again. 10 And the third test further confirmed the severe 11 cytotoxic potential of Procol, correct?</p> <p>12                 A. Yes.</p> <p>13                 Q. And Procol is an additive that can 14 bloom to the surface during the manufacturing 15 process and leach out while implanted in a woman's 16 body, correct?</p> <p>17                 MR. THOMAS: Object to the form of 18 the question.</p> <p>19                 THE WITNESS: Yes.</p> <p>20 BY MR. THORNBURGH:</p> <p>21                 Q. It says: To evaluate the 22 significance of the cytotoxicity in a clinically 23 relevant in vivo system, an intramuscular 24 implantation study was conducted in rats using 25 cytotoxic polypropylene mesh from the TTV device and</p>	<p>1                 Q. Well, we've already -- you've already 2 established, and these documents establish and your 3 testing established, that Procol, which was 4 contained in both of these products, was severely 5 cytotoxic, even at very low levels, right?</p> <p>6                 A. Yes, as we discuss in the paragraph 7 at the top.</p> <p>8                 Q. So you are testing two mesh products, 9 both of which contained a severely cytotoxic 10 additive, to compare the difference in tissue 11 reaction, correct?</p> <p>12                 A. Yes.</p> <p>13                 MR. THOMAS: Object to the form of 14 the question.</p> <p>15 BY MR. THORNBURGH:</p> <p>16                 Q. Now, one of the differences I assume 17 that you'll testify to is -- well, strike that.</p> <p>18                 In summary, this data suggests that 19 the probable mechanism of cytotoxicity of the 20 polypropylene mesh from the TTV devices is the 21 presence of Procol LA-10, a potent non-ionic 22 surfactant, with the ability to disrupt cell 23 membranes and cause cell death in in vitro systems. 24 Right?</p> <p>25                 A. That's correct.</p>

## Confidential - Subject to Protective Order

Page 503	Page 505
<p>1       Q. The increased cytotoxicity of 2 polypropylene suture -- and this is a question I 3 have for you.</p> <p>4       The increased cytotoxicity of 5 polypropylene suture after autoclaving can be 6 attributed to the increased amount of Procol LA in 7 aqueous extracts. Thus, any treatment in 8 polypropylene mesh which would result in more or 9 less of Procol LA-10 available for extraction would 10 be expected to result in greater or lesser 11 cytotoxicity respectively.</p> <p>12      Do you know if the polypropylene in 13 TVT is autoclaved?</p> <p>14      A. No. Sterilized by ethylene oxide.</p> <p>15      Q. Okay. But the issue with autoclaving 16 was the additional heat that is applied to sterilize 17 the mesh, right?</p> <p>18      A. The suture and -- yes, that's 19 correct.</p> <p>20      Q. Which can cause blooming of these 21 additives at the surface of the polypropylene. Is 22 that correct?</p> <p>23      A. Yes. That's the hypothesis.</p> <p>24      Q. Now, what we know from your prior 25 testimony is that the TVT device undergoes the heat</p>	<p>1       Q. Do you recall writing a 2 biocompatibility assessment where you say 3 specifically that the -- what you'd expect to see in 4 vivo if TVT was cytotoxic would be delayed or wound 5 healing defects or ulcerations?</p> <p>6       A. I don't recall that specifically. 7 Certainly, the adverse impact in wound healing. And 8 I guess if it's severe enough, it might cause 9 ulceration of overlying tissue, but I don't recall 10 that specifically.</p> <p>11      Q. You would agree that based on the 12 evidence, TVT, the Prolene in TVT, showed evidence 13 of cytotoxicity --</p> <p>14      MR. THOMAS: Object to the form of 15 the question.</p> <p>16      BY MR. THORNBURGH:</p> <p>17      Q. -- at least in vitro?</p> <p>18      A. Yes. It showed evidence of 19 cytotoxicity in vitro.</p> <p>20      Q. And nowhere in the IFU are those 21 findings disclosed to physicians, correct?</p> <p>22      A. Yes. And that's because there's no 23 translation to increase tissue reaction or adverse 24 impact in wound healing.</p> <p>25      Q. Have you seen the studies that show</p>
<p style="text-align: center;">Page 504</p> <p>1 shrink tubing, which also can cause blooming of 2 antioxidants like -- or the additives like Procol to 3 the surface of the TVT fibers, correct?</p> <p>4       A. Yes, that's correct.</p> <p>5       Q. And if the Procol blooms to the 6 surface during the manufacturing process, it can 7 increase the risk of cytotoxicity, correct?</p> <p>8       MR. THOMAS: Object to the form of 9 the question.</p> <p>10      THE WITNESS: It can increase the 11 risk of cytotoxicity in vitro. However, all of the 12 in vivo implantation studies suggest that that's not 13 the case; that the substance that might cause severe 14 in vitro cytotoxicity is not making a contribution 15 to increased tissue reaction in vivo.</p> <p>16      BY MR. THORNBURGH:</p> <p>17      Q. Well, some of the things that -- some 18 of the symptoms that we would see if polypropylene 19 in TVT is cytotoxic would be increased tissue 20 reaction, wound healing defects, and ulcerations, 21 correct?</p> <p>22      A. I think certainly increased tissue 23 reaction and adverse impact in wound healing. The 24 ulceration question, it kind of depends. I 25 generalized by saying that.</p>	<p style="text-align: center;">Page 506</p> <p>1 that the Prolene mesh can cause chronic wound 2 healing problems?</p> <p>3       MR. THOMAS: Object to the form of 4 the question.</p> <p>5       THE WITNESS: No. I'd have to see 6 the specific reports that you're talking about.</p> <p>7      BY MR. THORNBURGH:</p> <p>8       Q. I am asking you: Do you recall 9 seeing any studies as you sit here -- did you review 10 any studies before you came in here today that 11 showed that the Prolene -- that the polypropylene 12 meshes can lead to chronic wound healing problems?</p> <p>13      MR. THOMAS: Object to the form of 14 the question.</p> <p>15      THE WITNESS: No.</p> <p>16      BY MR. THORNBURGH:</p> <p>17      Q. Did you review any studies before you 18 came here today that show that the Prolene in TVT 19 can cause erosions and extrusions through the 20 vaginal wall?</p> <p>21      MR. THOMAS: Object to the form of 22 the question.</p> <p>23      THE WITNESS: No. And that would be 24 in the clinical area, and my responsibility here is 25 to address preclinical questions.</p>

## Confidential - Subject to Protective Order

	Page 507	Page 509
	<p>1 BY MR. THORNBURGH:</p> <p>2 Q. Did you look at any -- any of the</p> <p>3 explant reports that Ethicon received that showed</p> <p>4 that women who had mesh devices explanted, also,</p> <p>5 some of those women had ulcerations?</p> <p>6 MR. THOMAS: Object to the form of</p> <p>7 the question.</p> <p>8 THE WITNESS: There would be a</p> <p>9 clinical explant, and I have not reviewed any of</p> <p>10 that information.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. You have also been designated as the</p> <p>13 30(b)(6) witness to discuss the specifics of all</p> <p>14 testing related to TTV products during the design,</p> <p>15 development stages, including but not limited to</p> <p>16 porosity testing, particle loss, degradation, and</p> <p>17 leaching. We'll shorten that up.</p> <p>18 You have also been designated as the</p> <p>19 Ethicon person who will testify regarding all</p> <p>20 testing related to the TTV products and particle</p> <p>21 loss. Correct?</p> <p>22 A. Yes, that's correct.</p> <p>23 MR. THORNBURGH: Off the record.</p> <p>24 THE VIDEOGRAPHER: Off the video</p> <p>25 record, 3:18.</p>	<p>1 THE WITNESS: Okay.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. And it will relate preclinically.</p> <p>4 A. Okay. Fine.</p> <p>5 Q. We'll talk about it and refresh in</p> <p>6 the preclinical context.</p> <p>7 A. Okay. Fine.</p> <p>8 Q. Now, this is a document that</p> <p>9 discusses problems with particle loss that were</p> <p>10 being experienced -- were experienced by Ethicon</p> <p>11 regarding its TTV products, correct?</p> <p>12 MR. THOMAS: Object to the form of</p> <p>13 the question.</p> <p>14 THE WITNESS: I'm sorry. I was kind</p> <p>15 of reading through here, and I see that I have</p> <p>16 looked at it before.</p> <p>17 Could you please repeat that</p> <p>18 question?</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. Yeah. This is an e-mail from Dan</p> <p>21 Smith to Janice Burns which discusses problems of</p> <p>22 particle loss that were being seen by doctors in the</p> <p>23 field who were using the TTV product, right?</p> <p>24 MR. THOMAS: Object to the form of</p> <p>25 the question.</p>
	<p>1 (Short break.)</p> <p>2 THE VIDEOGRAPHER: Back on the video</p> <p>3 record, 3:24.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. Doctor, I want to mark as -- give me</p> <p>6 one second.</p> <p>7 There we go. I am going to mark as</p> <p>8 Exhibit Number 2255 an e-mail dated February 27,</p> <p>9 2004.</p> <p>10 (Document marked for identification</p> <p>11 as Exhibit T-2255.)</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. This is an e-mail from Dan Smith to a</p> <p>14 number of -- or to Janice Burns dated February 27,</p> <p>15 2004, discussing issues with TTV and particle loss.</p> <p>16 Right?</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question.</p> <p>19 THE WITNESS: I've not seen this</p> <p>20 memo, and I am not sure that it relates to the</p> <p>21 biocompatibility or particle loss in a preclinical</p> <p>22 arena. I have to read through here --</p> <p>23 MR. THOMAS: I think they showed it</p> <p>24 to you at your last deposition.</p> <p>25 MR. THORNBURGH: Yeah.</p>	<p>1 THE WITNESS: Yes. That's what it</p> <p>2 looks like.</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. And in that context, Dan Smith says:</p> <p>5 This is not going away any time soon, and</p> <p>6 competition will have a field day. Major damage</p> <p>7 control offensive needs to start to educate reps and</p> <p>8 surgeons upfront they -- that they will see blue</p> <p>9 shit, and it is okay. This is why I wanted to</p> <p>10 launch TTV-O in clear.</p> <p>11 Do you see that?</p> <p>12 A. Yes.</p> <p>13 Q. And when you worked for -- as</p> <p>14 Ethicon, you recognize that there is -- at least</p> <p>15 during the mechanical cut days of TTV mesh, there</p> <p>16 was a problem with particles falling away from the</p> <p>17 mesh, right?</p> <p>18 MR. THOMAS: Object to the form of</p> <p>19 the question; scope.</p> <p>20 THE WITNESS: Yes.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. In fact, that same month -- I've</p> <p>23 handed you what's been marked as Exhibit</p> <p>24 Number 2256.</p> <p>25 (Document marked for identification</p>

## Confidential - Subject to Protective Order

Page 511	Page 513
<p>1 as Exhibit T-2256.)</p> <p>2 MR. THOMAS: May I have one, please?</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. That same year, in November of 2004,</p> <p>5 Ethicon received an e-mail concerning complaints</p> <p>6 from Dr. Eberhard.</p> <p>7 It says: Dear all, please see</p> <p>8 attached below a letter with pictures of</p> <p>9 competitor's device and its translation from Dr.</p> <p>10 Eberhard, an important customer in Switzerland,</p> <p>11 regarding mesh fraying. Regarding the mesh frayed</p> <p>12 complaints, decision is not open corrective</p> <p>13 action -- a decision to not open corrective action</p> <p>14 is based on the following memo. Could you please</p> <p>15 give feedback?</p> <p>16 So this is an e-mail regarding</p> <p>17 Dr. Eberhard, who had written a letter to Ethicon</p> <p>18 regarding problems with the mesh devices, right?</p> <p>19 MR. THOMAS: Object to the form of</p> <p>20 the question; scope.</p> <p>21 THE WITNESS: Yes. It looks that to</p> <p>22 be the case.</p> <p>23 BY MR. THORNBURGH:</p> <p>24 Q. And David Menneret on November 9th --</p> <p>25 of November 12th of 2004 wrote that: We already</p>	<p>1 BY MR. THORNBURGH:</p> <p>2 Q. What's been marked as Exhibit</p> <p>3 Number 2257 is a document or a fax that was received</p> <p>4 by Basso Sibylle to David Menneret, who said:</p> <p>5 Attached is Dr. Eberhard's letter regarding TVT blue</p> <p>6 tape.</p> <p>7 Do you see that?</p> <p>8 A. Yes.</p> <p>9 (Document marked for identification</p> <p>10 as Exhibit T-2258.)</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. I've marked as Exhibit Number 2258</p> <p>13 the translated letter from Dr. Eberhard, who writes:</p> <p>14 Dear Emilie, Business Unit Manager Gynecare</p> <p>15 Switzerland. Please find attached a TVT tape which</p> <p>16 was used as a demo unit for patients before they had</p> <p>17 their operation. Already at the operation, it is</p> <p>18 embarrassing to see how the tape is crumpling. It</p> <p>19 gets worse if there is stretch on the tape.</p> <p>20 I can't understand that no one will</p> <p>21 solve the problem for such a long time. At least as</p> <p>22 the tape has becoming blue, everyone has realized</p> <p>23 that the quality of the tape is terrible. A tape</p> <p>24 has to be weaved and should not crumble. Please try</p> <p>25 one and you will see that the tape is crumpling.</p>
<p style="text-align: center;">Page 512</p> <p>1 received similar complaints. This kind of issue is</p> <p>2 usually attributed to over-tensioning of the tape</p> <p>3 during the procedure. Fraying is inherent in the</p> <p>4 product based on the mesh construction. When any</p> <p>5 amount of tension is applied to the mesh, fraying</p> <p>6 occurs. Stretching of the mesh increases the</p> <p>7 probability of fraying.</p> <p>8 Do you see that there?</p> <p>9 MR. THOMAS: Object to the form of</p> <p>10 the question; scope.</p> <p>11 THE WITNESS: Yes.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. I am going to put it in the scope of</p> <p>14 the deposition. So according to David Menneret, one</p> <p>15 of the problems with fraying and particle loss was</p> <p>16 from tensioning of the mesh and specifically</p> <p>17 tensioning of the TTV tape or the tape that was</p> <p>18 being used by Ethicon, correct?</p> <p>19 MR. THOMAS: Same objection.</p> <p>20 THE WITNESS: Yes. I think that's</p> <p>21 what they're referring to.</p> <p>22 (Whereupon, a discussion was held off</p> <p>23 the record.)</p> <p>24 (Document marked for identification</p> <p>25 as Exhibit T-2257.)</p>	<p style="text-align: center;">Page 514</p> <p>1 Did I read that correctly?</p> <p>2 MR. THOMAS: Object to the form;</p> <p>3 scope.</p> <p>4 THE WITNESS: Yes.</p> <p>5 (Document marked for identification</p> <p>6 as Exhibit T-2259.)</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Marked as Exhibit Number 2259 a</p> <p>9 compilation of e-mails --</p> <p>10 MR. THOMAS: May I have one, please?</p> <p>11 MR. THORNBURGH: I'm sorry, Counsel.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. -- a string of e-mails in which</p> <p>14 Charlotte Owens was one of the recipients and</p> <p>15 authors of the e-mails.</p> <p>16 Do you know who Charlotte Owens is?</p> <p>17 A. I think we overlapped a little bit.</p> <p>18 Obviously, she is a medical director of Gynecare.</p> <p>19 Q. So she was in charge, the director of</p> <p>20 the medical affairs part of Ethicon, right?</p> <p>21 A. Yes, for Gynecare.</p> <p>22 Q. For Gynecare.</p> <p>23 And she received, according to this</p> <p>24 document, an e-mail from Dan Smith, who appears to</p> <p>25 have included an e-mail or an excerpt from something</p>

## Confidential - Subject to Protective Order

Page 515	Page 517
<p>1 authored by Steve Bell of Gynecare.</p> <p>2 It says: Dear all, as more and more</p> <p>3 customers now move to TVT blue and TVT-O with blue</p> <p>4 mesh, you may sometimes hear, I can see small blue</p> <p>5 pieces come off the mesh. What's wrong?</p> <p>6 The key points, it says, number two,</p> <p>7 the same -- number one, Gynecare blue TVT mesh and</p> <p>8 Gynecare clear TVT mesh are exactly the same.</p> <p>9 Number two, the same number of</p> <p>10 particles came off the clear mesh when it was</p> <p>11 stretched.</p> <p>12 Do you see where it says "when it was</p> <p>13 stretched"? Do you see that?</p> <p>14 A. Yes.</p> <p>15 Q. Okay. It's just that you see them</p> <p>16 against the tissue and skin more when they are blue.</p> <p>17 This is no different to what has happened in the</p> <p>18 past seven years with TVT.</p> <p>19 Reassure your doctors that this is</p> <p>20 part of the success of TVT. The way we have cut the</p> <p>21 mesh makes the edges softer, and we feel that this</p> <p>22 has been a crucial success factor in TVT. Reassure</p> <p>23 that Prolene has proven to be inert.</p> <p>24 Do you see that? "Proven to be</p> <p>25 inert." Right?</p>	<p>1 the question.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Yes, Doctor?</p> <p>4 A. Yes.</p> <p>5 Q. This doesn't -- this summary doesn't</p> <p>6 say remind physicians that Prolene mesh is</p> <p>7 susceptible to surface degradation, does it?</p> <p>8 A. I don't know that I should be even</p> <p>9 commenting on this exchange between a marketing</p> <p>10 person and the field.</p> <p>11 Q. Well --</p> <p>12 A. First, he's not a scientist. Second,</p> <p>13 I am not sure what it's got to do with the</p> <p>14 preclinical data that we brought here to talk about.</p> <p>15 Q. I am going to put it all into</p> <p>16 context. I assure you.</p> <p>17 A. Okay.</p> <p>18 Q. But it says -- it doesn't say remind</p> <p>19 physicians who are purchasing these permanent</p> <p>20 implants which are going to be put into -- in and</p> <p>21 around the vaginal area of the woman's body, that</p> <p>22 the surface area or the surface layer of the Prolene</p> <p>23 in the TVT is susceptible to surface cracking or</p> <p>24 surface degradation, right?</p> <p>25 MR. THOMAS: Object to the form of</p>
<p style="text-align: center;">Page 516</p> <p>1 A. Yes, I see that.</p> <p>2 Q. In summary, be proactive. The</p> <p>3 competition will try to target this, especially</p> <p>4 Bard, as they have a sealed edge tape, and remind</p> <p>5 your customers it is the same as clear. It is</p> <p>6 proven safe implant. In the blue format over</p> <p>7 100,000 have been implanted worldwide. Remind them</p> <p>8 that the benefits -- of the benefits of blue mesh.</p> <p>9 Remind them it is inert Prolene with over 25 years</p> <p>10 of health. Remind them our wealth of clinical data</p> <p>11 with ultra low complication rates.</p> <p>12 Do you see that?</p> <p>13 A. Yes. I can read it.</p> <p>14 Q. Okay. So number one is -- there's</p> <p>15 particle loss being seen when the tape is stretched.</p> <p>16 Do you see that?</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question; scope.</p> <p>19 THE WITNESS: Yes, I see it.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. Okay. And, number two, we know from</p> <p>22 what we've seen in the internal studies by Ethicon</p> <p>23 that the Prolene in the TVT mesh is susceptible to</p> <p>24 surface degradation, correct?</p> <p>25 MR. THOMAS: Object to the form of</p>	<p style="text-align: center;">Page 518</p> <p>1 the question. Scope.</p> <p>2 THE WITNESS: I want to make a</p> <p>3 distinction between particles shed from the mesh,</p> <p>4 which I consider a macroparticle, and the kind of</p> <p>5 microparticles that you're alluding might shed from</p> <p>6 or as a result of some sort of surface cracking</p> <p>7 observed on the Prolene fiber. Two different</p> <p>8 issues.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Both --</p> <p>11 MR. THOMAS: Are you finished?</p> <p>12 THE WITNESS: Yeah.</p> <p>13 MR. THOMAS: Sorry.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. Both of which, by themselves, can</p> <p>16 elicit a -- an inflammatory response.</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. In fact, nanoparticles or</p> <p>21 microparticles will excite macrophages more than</p> <p>22 macroparticles will.</p> <p>23 MR. THOMAS: Which question do you</p> <p>24 want him to answer?</p> <p>25 BY MR. THORNBURGH:</p>

## Confidential - Subject to Protective Order

Page 519	Page 521
<p>1       Q.    Correct?</p> <p>2        MR. THOMAS: Which question do you</p> <p>3        want him to answer? You posed two of them.</p> <p>4        MR. THORNBURGH: Both.</p> <p>5        MR. THOMAS: One at a time.</p> <p>6        MR. THORNBURGH: My last one first.</p> <p>7        THE WITNESS: So the first part, the</p> <p>8        fragments that we've talked about that have been</p> <p>9        observed alongside the suture and in what I call</p> <p>10       macroparticles have a tissue reaction to them very</p> <p>11       similar to the polypropylene fiber.</p> <p>12       And the second question in terms of</p> <p>13       these microparticles that I make reference to that</p> <p>14       you allude would come off the surface as a result of</p> <p>15       surface cracking, there's been no evidence in any of</p> <p>16       the 49 documents that I've brought today that</p> <p>17       there's an increase in tissue reaction over time.</p> <p>18       And, in fact, in many studies, there's a diminution</p> <p>19       of the tissue reaction over time. So there's no</p> <p>20       evidence to support that second piece.</p> <p>21       BY MR. THORNBURGH:</p> <p>22       Q.    The truth is the testing that you and</p> <p>23       Ethicon were doing preclinically was really</p> <p>24       marketing studies. They were studies to -- that</p> <p>25       were being conducted because of the threat from</p>	<p>1       Q.    It's not the same implant condition</p> <p>2        that is occurring in women who are having these</p> <p>3        implants put in their bodies for the rest of their</p> <p>4        lives --</p> <p>5        MR. THOMAS: Object to the form of</p> <p>6        the question.</p> <p>7        BY MR. THORNBURGH:</p> <p>8        Q.    -- right?</p> <p>9        MR. THOMAS: Scope.</p> <p>10       THE WITNESS: I don't know all the</p> <p>11       parameters of that condition that you make reference</p> <p>12       to, okay, because I suspect that each patient has</p> <p>13       different issues.</p> <p>14       And this study was an attempt to make</p> <p>15       the implantation procedure very consistent so that</p> <p>16       we could determine whether or not there is</p> <p>17       stretching of the tape or deposition of particles in</p> <p>18       the surrounding tissue.</p> <p>19       BY MR. THORNBURGH:</p> <p>20       Q.    You didn't answer my question</p> <p>21       completely.</p> <p>22       It's not the same implant condition</p> <p>23       that is occurring in women who are having these</p> <p>24       implants put into their bodies for the rest of their</p> <p>25       lives.</p>
<p style="text-align: center;">Page 520</p> <p>1       competitors like Bard.</p> <p>2        MR. THOMAS: Object to the form of</p> <p>3        the question; scope.</p> <p>4        THE WITNESS: Absolutely not. The</p> <p>5        preclinical studies conducted by Ethicon were either</p> <p>6        for regulatory submission or for internal</p> <p>7        information to advance product development.</p> <p>8        BY MR. THORNBURGH:</p> <p>9        Q.    When you did rabbit studies that</p> <p>10       looked at particle loss in rabbits, the tape that</p> <p>11       was being implanted in the rabbits was not</p> <p>12       undergoing the same type of stresses and strains</p> <p>13       that the tape undergoes in the human environment or</p> <p>14       the human condition when the device is being</p> <p>15       implanted, correct?</p> <p>16       MR. THOMAS: Object to the form of</p> <p>17       the question; scope.</p> <p>18       THE WITNESS: As I recall in that</p> <p>19       study -- and we could make reference to it, and I</p> <p>20       probably should go to it -- that they implanted the</p> <p>21       mesh in a manner that the mesh might be implanted in</p> <p>22       patients; that is, insertion, passage through</p> <p>23       muscle, which would offer up some tension, and then</p> <p>24       implantation.</p> <p>25       BY MR. THORNBURGH:</p>	<p style="text-align: center;">Page 522</p> <p>1       MR. THOMAS: Object to the form of</p> <p>2        the question; scope. And, also, he did answer your</p> <p>3        question.</p> <p>4        BY MR. THORNBURGH:</p> <p>5        Q.    Well, number one, rabbits are</p> <p>6        quadrupeds, not bipedal, right?</p> <p>7        A.    Well, I thought we were talking about</p> <p>8        the conditions of implantation, and it would have</p> <p>9        nothing to do with the number of legs.</p> <p>10       Q.    Well, we're talking about -- we're</p> <p>11        talking about the condition, the real human</p> <p>12        condition, compared to the animal condition where</p> <p>13        you conducted these studies.</p> <p>14       MR. THOMAS: He's not a clinical guy.</p> <p>15       MR. THORNBURGH: Number one -- I</p> <p>16        think he can say pretty easily that rabbits are</p> <p>17        bipedal -- or quadrupeds, not bipeds.</p> <p>18       BY MR. THORNBURGH:</p> <p>19       Q.    Right?</p> <p>20       A.    I said I don't know all the</p> <p>21        conditions in the clinical situation that you're</p> <p>22        alluding to and whether or not they would compare</p> <p>23        with the passage of mesh through skeletal muscle of</p> <p>24        rabbit.</p> <p>25       Q.    Your rat study, which has previously</p>

## Confidential - Subject to Protective Order

Page 523	Page 525
<p>1 been marked as T-2133, ETH.MESH.05316775 --</p> <p>2 MR. THOMAS: Which one are we talking</p> <p>3 about, Dan?</p> <p>4 MR. THORNBURGH: Sorry.</p> <p>5 MR. THOMAS: Which study?</p> <p>6 MR. THORNBURGH: Yeah. The</p> <p>7 histological evaluation and comparison of mechanical</p> <p>8 pullout strength of Prolene and Prolene Soft mesh in</p> <p>9 a rabbit model.</p> <p>10 Let's go ahead and mark it as an</p> <p>11 exhibit.</p> <p>12 It's already been marked, Exhibit</p> <p>13 Number 2133. Sorry. 2133. It was marked at a</p> <p>14 prior deposition.</p> <p>15 MR. THOMAS: Oh, okay.</p> <p>16 Do you have another one?</p> <p>17 MR. THORNBURGH: Yeah, I do. Sorry.</p> <p>18 I think I left the extra copy -- oh, found it.</p> <p>19 2133.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. Now, Ethicon was concerned about</p> <p>22 the -- what the competition would say about the TVT</p> <p>23 products as a result of the particles that were</p> <p>24 being seen with the TVT blue, correct?</p> <p>25 MR. THOMAS: Object to the form of</p>	<p>1 musculature.</p> <p>2 Q. Okay. And how much mesh is implanted</p> <p>3 in women during the implant process?</p> <p>4 MR. THOMAS: Object to the form of</p> <p>5 the question; scope.</p> <p>6 THE WITNESS: I don't know that</p> <p>7 number. That's a clinical issue, and it would</p> <p>8 depend on which TVT product you're talking about.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Well, the more mesh, the more</p> <p>11 particles there are to flake off of the mesh device,</p> <p>12 right?</p> <p>13 MR. THOMAS: Object to the form of</p> <p>14 the question.</p> <p>15 THE WITNESS: I don't know that for</p> <p>16 certain.</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. You don't know that?</p> <p>19 A. No.</p> <p>20 Q. Did you look at the Pariente study</p> <p>21 before you came here today?</p> <p>22 A. No.</p> <p>23 Q. Do you recall discussing the Pariente</p> <p>24 study during your deposition last time?</p> <p>25 A. The name sounds familiar.</p>
<p style="text-align: center;">Page 524</p> <p>1 the question; scope.</p> <p>2 THE WITNESS: Yeah. And I guess I</p> <p>3 can't really address what Ethicon was thinking and</p> <p>4 why they did stuff, only to -- insofar as it</p> <p>5 reflects the documents that we brought here today to</p> <p>6 talk about biocompatibility or any preclinical</p> <p>7 studies.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. So you conducted a 14-day rabbit</p> <p>10 study, right?</p> <p>11 A. Ethicon conducted such a study.</p> <p>12 Q. And women who have these devices</p> <p>13 implanted in their bodies are -- the intention is</p> <p>14 that these implants will remain in their bodies for</p> <p>15 the rest of the woman's life, correct?</p> <p>16 A. Yes.</p> <p>17 Q. Now, how much mesh -- what was the</p> <p>18 size of the mesh implanted in the rabbits?</p> <p>19 A. The mesh was -- the TVT tape width,</p> <p>20 about 10 millimeters. That's what was implanted.</p> <p>21 And samples of Prolene Soft mesh and ultrasonically</p> <p>22 cut mesh were done in a very similar way.</p> <p>23 And as I look on Page</p> <p>24 ETH.MESH.05316780, the intention was to leave 3</p> <p>25 centimeters of that mesh within the epaxial</p>	<p style="text-align: center;">Page 526</p> <p>1 Q. Do you recall that in the Pariente</p> <p>2 study, it was found that 8.5 percent of the</p> <p>3 particles in the TVT mesh fell away from the TVT</p> <p>4 product?</p> <p>5 MR. THOMAS: Object to the form of</p> <p>6 the question; scope.</p> <p>7 THE WITNESS: I don't recall that</p> <p>8 information.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Did any of your studies try to mimic</p> <p>11 the stresses and strains that were used in the</p> <p>12 Pariente study during the implantation of the mesh</p> <p>13 in rabbits, and in this case, in rabbits for</p> <p>14 days?</p> <p>15 MR. THOMAS: Object to the form of</p> <p>16 the question; scope.</p> <p>17 Do you have one to show him?</p> <p>18 THE WITNESS: Was it a clinical study</p> <p>19 or a preclinical study?</p> <p>20 MR. THOMAS: That's why I want you to</p> <p>21 see it.</p> <p>22 MR. THORNBURGH: It was an ex vivo</p> <p>23 study.</p> <p>24 THE WITNESS: It could be ex vivo</p> <p>25 from animals or humans.</p>

## Confidential - Subject to Protective Order

Page 527	Page 529
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. Do you know sitting here today</p> <p>3 whether the studies that you did were -- whether or</p> <p>4 not you used the Pariente study to determine</p> <p>5 particle loss in any of the studies that you did?</p> <p>6 MR. THOMAS: Object to the form of</p> <p>7 the question; scope.</p> <p>8 THE WITNESS: It's not indicated in</p> <p>9 the study report, any reference to the Pariente</p> <p>10 study.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. What loads were used when implanting</p> <p>13 the 3-centimeter by 1-centimeter samples in these</p> <p>14 rabbits?</p> <p>15 MR. THOMAS: Object to the form of</p> <p>16 the question.</p> <p>17 THE WITNESS: As indicated in the</p> <p>18 study report, the mesh was drawn through the</p> <p>19 epitaxial musculature, and whatever forces that</p> <p>20 would offer the mesh, that's what happened.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. And can you hold up for the ladies</p> <p>23 and gentlemen of the jury approximately 3</p> <p>24 centimeters?</p> <p>25 A. Maybe an inch and-a-half.</p>	<p>1 Q. Well, then, you didn't consider the</p> <p>2 level of force used when implanting a TVT-Retropubic</p> <p>3 in women to try to mimic the same loads being</p> <p>4 applied to the one and-a-half inch piece of mesh</p> <p>5 that you're implanting in these rabbits, did you?</p> <p>6 A. I can't speak to anything that was</p> <p>7 done in the clinical environment.</p> <p>8 Q. Did you ask anybody from the clinical</p> <p>9 environment: Hey, you know what? We want to try</p> <p>10 to, in the preclinical environment, to test this</p> <p>11 issue. We want to determine the amount of force or</p> <p>12 loads that are being applied during the implantation</p> <p>13 of a larger piece of mesh in women so that we can</p> <p>14 mimic that condition in the preclinical studies that</p> <p>15 we're doing with one and-a-half piece of mesh?</p> <p>16 A. That was not done --</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. You did not. Did you have any</p> <p>21 discussions with anybody in the clinical arena to</p> <p>22 determine the implant conditions in women to try to</p> <p>23 mimic those implant conditions in the animals that</p> <p>24 you were testing this mesh in?</p> <p>25 A. That's not indicated in this report.</p>
<p style="text-align: center;">Page 528</p> <p>1 Q. So your study in rabbits was about an</p> <p>2 inch and-a-half piece of mesh that was implanted in</p> <p>3 the muscle of the rabbit for 14 days max, right?</p> <p>4 A. That's correct.</p> <p>5 Q. Did you measure the force by Newtons</p> <p>6 or the load by Newtons that would be used or was</p> <p>7 used during the implantation process to determine</p> <p>8 whether or not it would mimic the implantation</p> <p>9 conditions in human women?</p> <p>10 A. No assessments of force required to</p> <p>11 implant the mesh samples was recorded, only the</p> <p>12 explant tensions.</p> <p>13 Q. Do you know what forces are used</p> <p>14 during the implantation process in women?</p> <p>15 MR. THOMAS: Object to the form of</p> <p>16 the question. Scope.</p> <p>17 THE WITNESS: It is a clinical</p> <p>18 question.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. Well, isn't that -- isn't that</p> <p>21 clinical information important when you're trying to</p> <p>22 determine particle loss in rabbits?</p> <p>23 A. This preclinical study was an attempt</p> <p>24 to simulate implantation in patients. And it is</p> <p>25 what it is.</p>	<p style="text-align: center;">Page 530</p> <p>1 Those discussions may have taken place.</p> <p>2 Q. Did you do that? Did you try -- did</p> <p>3 you understand or try to understand the amount of</p> <p>4 force or loads in any of the studies that you did</p> <p>5 in -- that were -- that were needed for implantation</p> <p>6 in women so that you could mimic the same implant</p> <p>7 condition in your preclinical studies?</p> <p>8 MR. THOMAS: Object to the form of</p> <p>9 the question.</p> <p>10 THE WITNESS: Again, you're talking</p> <p>11 about data that would be collected in a clinical</p> <p>12 environment, and I am not here to address that other</p> <p>13 than the preclinical data that we brought and</p> <p>14 anything that's relevant to it.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. Did you discuss with anybody for any</p> <p>17 of the preclinical studies or before you walked in</p> <p>18 here today what the implant conditions are like in</p> <p>19 terms of a force required to implant the stretching</p> <p>20 that's done during the implant procedure so that you</p> <p>21 could gain a better understanding of your</p> <p>22 preclinical studies?</p> <p>23 MR. THOMAS: Object to the form of</p> <p>24 the question.</p> <p>25 THE WITNESS: That's the kind of</p>

## Confidential - Subject to Protective Order

Page 531	Page 533
<p>1 information that would be in the clinical arena, and 2 that's not part of what I am here to discuss. 3 BY MR. THORNBURGH: 4 Q. But you didn't discuss with anybody 5 in the clinical arena whether or not the preclinical 6 studies that you're trying to rely on now were done 7 in a condition that would mimic the human implant 8 condition? 9 MR. THOMAS: Object to the form of 10 the question. 11 THE WITNESS: I think I've answered 12 that three times, and the same answer I'll give now, 13 and that is this information would be collected in a 14 clinical environment and is not part of what I am 15 here to discuss. 16 BY MR. THORNBURGH: 17 Q. Let's go ahead and mark as 18 Exhibit 2260 the Pariente study. 19 (Document marked for identification 20 as Exhibit T-2260.) 21 MR. THORNBURGH: Dave, I have a copy 22 for you, and I just don't have -- it's not stapled. 23 MR. THOMAS: That's fine. Thank you. 24 BY MR. THORNBURGH: 25 Q. You've seen this study before,</p>	<p>1 before and after soft procedure, and values range 2 from 0 to 8.5 percent of initial weight. 3 Did you -- in any of your studies, 4 did you weigh the sample pre and post procedure? 5 A. No. 6 MR. THOMAS: Pre-implant? 7 BY MR. THORNBURGH: 8 Q. Pre-implant and post explant. 9 A. No. That would not be practical, 10 because there would be tissue adherent to the mesh, 11 and it would alter its weight. 12 Q. So you didn't look at the weight to 13 determine particle loss, did you? 14 A. No. But we looked at something more 15 important than that in the study that we discussed 16 earlier, and that is whether or not particles were 17 observed in the immediate vicinity of the implant. 18 Q. You didn't look at weight, did you? 19 A. No. 20 Q. You didn't determine the percent of 21 particle loss in any of your studies, did you? 22 A. As I pointed out -- 23 Q. It's a yes or no question. 24 A. As I pointed out, weighing a mesh 25 after implantation would not be useful, because</p>
<p style="text-align: center;">Page 532</p> <p>1 haven't you? 2 A. I think I have, but it doesn't look 3 so familiar. The name does seem familiar, but I'd 4 have to read through it to see what happened here. 5 Q. Do you want to take a moment and look 6 at it? 7 A. Sure. 8 Okay. This looks like an in vitro 9 study. 10 Q. Did you look at this study before you 11 came in here today? 12 A. No. 13 Q. You don't recall looking at the study 14 with me during your prior deposition? 15 A. Again, I think the name rings a bell, 16 but I've looked at a lot of studies. 17 Q. Okay. Well, in the Pariente study, 18 the investigators were looking at -- as their 19 endpoint or one of their endpoints, particle loss, 20 correct? 21 A. Yes. 22 Yes, I recall the study now. This 23 one we discussed during the last deposition. 24 Q. And it says here: To evaluate the 25 shedding of particles, each sample was weighed</p>	<p style="text-align: center;">Page 534</p> <p>1 there would be additional weight of tissue adherent 2 to it. 3 Q. It could dissolve the tissue, right? 4 MR. THOMAS: Object to the form of 5 the question. 6 THE WITNESS: That would be a 7 possibility. 8 BY MR. THORNBURGH: 9 Q. So you could have weighed it after 10 dissolution or dissolving -- desiccation of the 11 tissue, right? 12 A. That's possible. That could 13 introduce other things that you would have to 14 control for, but, clearly, there's no end to the 15 number of studies that could be conducted. 16 Q. But you didn't do that study, did 17 you? 18 A. No. 19 Q. And you didn't determine the 20 percentage of particle loss, correct? 21 MR. THOMAS: Object to the form of 22 the question. 23 THE WITNESS: That's correct. 24 BY MR. THORNBURGH: 25 Q. The study goes on to say: During</p>

## Confidential - Subject to Protective Order

Page 535	Page 537
<p>1 surgical use, these articles are released in soft  2 tissue, and it is not possible to know where they  3 go.</p> <p>4 MR. THOMAS: There's no question  5 pending.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Do you see that?</p> <p>8 A. Yeah, I see it.</p> <p>9 Q. And that's true? When particles are  10 released into soft tissue, they can migrate, can't  11 they?</p> <p>12 MR. THOMAS: Object to the form of  13 the question.</p> <p>14 THE WITNESS: That's not very likely.  15 With any particles, any macroparticles that would be  16 adherent to the mesh or they might flake off the  17 mesh in vivo, they would reside in the immediate  18 vicinity of the implant, and they would be  19 surrounded by connective tissue, just like each  20 element of the mesh.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. When I get a splinter in my finger,  23 no matter how deep it is, my body's -- my body's  24 inflammatory response to that little tiny piece of  25 splinter will push that splinter out of my body,</p>	<p>1 it might be associated with.</p> <p>2 Q. During surgical use, these particles  3 are released in soft tissue, and it is not possible  4 to know where they go.</p> <p>5 That's what these authors write,  6 correct?</p> <p>7 MR. THOMAS: Object to the form of  8 the question; scope.</p> <p>9 THE WITNESS: That is the opinion of  10 these authors.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. When these authors tested particle  13 loss, they found that the TTVT lost the most  14 particles of all the things that were tested,  15 correct?</p> <p>16 MR. THOMAS: Object to the form of  17 the question; scope.</p> <p>18 THE WITNESS: Under the conditions of  19 their testing, that's the case.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. And they found that TTVT lost  22 8.5 percent of the particles, right?</p> <p>23 MR. THOMAS: Object to the form of  24 the question; scope.</p> <p>25 THE WITNESS: I think -- I think they</p>
<p style="text-align: center;">Page 536</p> <p>1 migrate it from where it found itself initially  2 until it's outside of my body, won't it? That  3 happens, doesn't it?</p> <p>4 A. That can happen if it's close enough  5 to the surface of your skin.</p> <p>6 Q. So migration of particles is possible  7 as a result of the inflammatory process that's  8 taking place in the human body, right?</p> <p>9 MR. THOMAS: Object to the form of  10 the question; scope.</p> <p>11 THE WITNESS: Highly unlikely.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. And that's based on what, sir?</p> <p>14 A. My experience looking at implanted  15 materials and the experience from the Prolene suture  16 NDA, which calls out macroparticles of the suture,  17 likely resulting from a swaging process of  18 macroparticles that got adhered to the suture, and  19 they got implanted inadvertently with the suture.</p> <p>20 And what's observed is that there's a  21 tissue reaction around the filament of the suture  22 and then adjacent to it, the particle, or the very  23 similar reaction around it.</p> <p>24 There's no evidence that that  25 particle will migrate away from the fiber from which</p>	<p style="text-align: center;">Page 538</p> <p>1 mean 8.5 percent of the weight was lost as  2 particulates.</p> <p>3 BY MR. THORNBURGH:</p> <p>4 Q. Yeah. I'm sorry. They found that  5 8.5 percent of the weight of the TTVT sling was lost  6 to particles, correct?</p> <p>7 MR. THOMAS: Object to the form of  8 the question; scope.</p> <p>9 THE WITNESS: I think that's what  10 they're saying.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Almost 10 percent of the TTVT sling  13 was lost in their study through particle loss,  14 right?</p> <p>15 MR. THOMAS: Object to the form of  16 the question; scope.</p> <p>17 THE WITNESS: Eight and-a-half  18 percent.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. Now, what loads were used to test TTVT  21 particle loss?</p> <p>22 MR. THOMAS: In what context, Dan?</p> <p>23 MR. THORNBURGH: In this study.</p> <p>24 MR. THOMAS: In which study?</p> <p>25 MR. THORNBURGH: The Pariente study.</p>

## Confidential - Subject to Protective Order

Page 539	Page 541
<p>1                   MR. THOMAS: Thank you.</p> <p>2   BY MR. THORNBURGH:</p> <p>3                   Q.   Measured in K per Newton. Do you</p> <p>4   know what that means? Peak load?</p> <p>5                   A.   Well, I'm just looking at the text</p> <p>6   where they talk about a soft procedure, and I'm</p> <p>7   looking for the data that would be corresponding to</p> <p>8   it.</p> <p>9                   Q.   I think if you look here, maybe this</p> <p>10   might help.</p> <p>11                  Do you see Table 1?</p> <p>12                  It shows low deformation curves?</p> <p>13                  A.   No. It looks like they gave each</p> <p>14   material a different load.</p> <p>15                  Q.   Starting at?</p> <p>16                  A.   TVT at .041 ranging to .012 for</p> <p>17   I-Stop.</p> <p>18                  Q.   Do you know how much load is used in</p> <p>19   the implantation of the TVT?</p> <p>20                  A.   I do not.</p> <p>21                  Q.   Do you know how much load you used</p> <p>22   when you implanted the 1.5 by -- 3-centimeter by</p> <p>23   1-centimeter piece of mesh in the rabbits use study?</p> <p>24                  A.   That was not measured.</p> <p>25                  Q.   You don't know sitting here today if</p>	<p>1                   lying adjacent to the implant. It would have the</p> <p>2   same kind of tissue reaction. It would be probably</p> <p>3   not discernable against the background of</p> <p>4   implantation of a mesh, even if it had no particles.</p> <p>5                   (Document marked for identification</p> <p>6   as Exhibit T-2261.)</p> <p>7   BY MR. THORNBURGH:</p> <p>8                  Q.   I marked as Exhibit Number 2261 a</p> <p>9   side-by-side photograph of the -- a document that</p> <p>10   includes a side-by-side photograph of mechanical cut</p> <p>11   TVT mesh and laser cut TVT mesh.</p> <p>12                  Have you seen this before?</p> <p>13                  A.   I don't think so.</p> <p>14                  Q.   Do you see where it says side-by-side</p> <p>15   relaxed after 50 percent elongation?</p> <p>16                  MCM would mean mechanical cut mesh,</p> <p>17   right?</p> <p>18                  A.   Yes.</p> <p>19                  MR. THOMAS: Object to the form of</p> <p>20   the question; scope.</p> <p>21                  All of this is beyond -- excuse me.</p> <p>22                  All of this is beyond what he's been designated for.</p> <p>23                  MR. THORNBURGH: No, it's not.</p> <p>24   BY MR. THORNBURGH:</p> <p>25                  Q.   LCM is laser cut mesh? Do you see</p>
<p style="text-align: center;">Page 540</p> <p>1   the loads that you used would have mimicked the</p> <p>2   loads used during the implantation of TVT in an</p> <p>3   actual woman, right?</p> <p>4                  A.   Well, as I mentioned four times</p> <p>5   previously, that would be data coming from the</p> <p>6   original -- the clinical arena, clinical</p> <p>7   environment, and it's not what I am here to address.</p> <p>8                  Q.   And that information wasn't important</p> <p>9   for you when you designed the studies that looked at</p> <p>10   particle loss, was it?</p> <p>11                  MR. THOMAS: Object to the form of</p> <p>12   the question.</p> <p>13                  THE WITNESS: Obviously, it was not</p> <p>14   considered necessary to execute this protocol.</p> <p>15   BY MR. THORNBURGH:</p> <p>16                  Q.   You would agree that if 8.5 percent</p> <p>17   of particles are being lost during the implant</p> <p>18   procedure on the TVT mesh, that that would increase</p> <p>19   the inflammatory response.</p> <p>20                  MR. THOMAS: Object to the form of</p> <p>21   the question; scope.</p> <p>22                  THE WITNESS: Highly unlikely, given</p> <p>23   the mass of material implanted as part of a tape.</p> <p>24                  Think about all of the monofilaments</p> <p>25   woven into a mesh, and think about some particulates</p>	<p style="text-align: center;">Page 542</p> <p>1   that?</p> <p>2                  Do you see that?</p> <p>3                  A.   I understand it's outside my area.</p> <p>4                  Q.   What -- what? No, it's not. I am</p> <p>5   going to put it in context.</p> <p>6                  What percentage of elongation was</p> <p>7   used in any of your studies to determine particle</p> <p>8   loss?</p> <p>9                  Did you ever measure the elongation</p> <p>10   that was being applied during the implantation of</p> <p>11   this device in any of the preclinical studies that</p> <p>12   you conducted?</p> <p>13                  A.   This might be the sixth time that</p> <p>14   I've responded to that question, and it's the same.</p> <p>15                  This is data that would be acquired</p> <p>16   in the clinical environment and is not part of the</p> <p>17   preclinical database that I'm here to discuss.</p> <p>18                  Q.   No. I asked you a different</p> <p>19   question. My question was: In any of the</p> <p>20   preclinical studies that you did or that Ethicon did</p> <p>21   to look at particle loss and tissue reaction, did</p> <p>22   you ever look at or record the percentage of</p> <p>23   elongation during the implantation in the animal</p> <p>24   study?</p> <p>25                  A.   Not that I'm aware of.</p>

## Confidential - Subject to Protective Order

Page 543	Page 545
<p>1       Q. Do you see where it says degradation?  2            MR. THOMAS: Where? What page are  3        you on?  4            MR. THORNBURGH: I'm on the  5        side-by-side image of the MCM versus LCM.  6        BY MR. THORNBURGH:  7            Q. You were designated as somebody that  8        would talk about evidence and studies regarding  9        degradation, right?  10          MR. THOMAS: We provided the studies  11        on which he's prepared to testify. This is not one  12        of the documents.  13          MR. THORNBURGH: You only provided  14        studies that would support your position, not  15        studies that would show that your position was  16        incorrect.  17          MR. THOMAS: Now, we invited you to  18        ask him to review other things you wanted to be  19        prepared on, and you didn't. So this is -- if you  20        want him to be prepared on it, he'll study it and  21        come back with an appropriate answer. He's not  22        prepared on it today.  23        BY MR. THORNBURGH:  24          Q. Do you see where it says degradation,  25        Doctor?</p>	<p>1       contribution of a particle to the overall reaction  2        to the entire tape.  3            Q. Inflammatory cells would be released  4        to attack that particle, to try to rid the body or  5        the animal of those particles, correct?  6            A. The tissue reaction to these  7        particles would be no different to the tissue  8        reaction to any filament in any part of the mesh.  9            Q. But there will be a tissue reaction,  10       right?  11           A. Yes.  12           Q. And when you increase the surface  13        area of a foreign body, that will increase the  14        body's inflammatory response, won't it, sir?  15           A. Any increase in tissue reaction will  16        not be perceptible against the background of tissue  17        reactions of the implanted tape.  18           Q. When you increase the surface area,  19        you increase the inflammatory response. Right,  20        Doctor?  21           MR. THOMAS: Object to the form of  22        the question.  23           THE WITNESS: That's a general --  24        that's a general principle.  25        BY MR. THORNBURGH:</p>
<p>1       A. I am not prepared to respond to those  2        questions today. It is not part of the preclinical  3        data package that I put together to address  4        degradation questions.  5        Q. You see where it shows the particles  6        that were lost? Do you see that? Do you see all  7        those flakes?  8        A. I can see particles in the  9        photograph.  10       Q. You're not suggesting to the ladies  11        and gentlemen of the jury that there won't be an  12        individual inflammatory response to each one of  13        those particles in tissue?  14       A. It would pale by comparison to the  15        tissue reaction from the implanted tape.  16       Q. But there will be an increased  17        inflammatory response or an inflammatory response to  18        the individual particle, correct?  19       A. There will be an inflammatory  20        response to that individual particle, but it will  21        not be appreciated against the inflammatory response  22        of the entire case.  23       Q. The phagocytes will try to gobble up  24        that foreign body, won't they?  25       A. One will not be able to differentiate</p>	<p>1       Q. And the principle is true. The  2        principle -- the answer to that principle would be  3        yes. When you increase the surface area, you  4        increase the inflammatory response.  5        A. Not in this case.  6        Q. In all other cases except for cases  7        against Ethicon products?  8        MR. THOMAS: Object to the form of  9        the question.  10       THE WITNESS: In any case where the  11        addition of particles -- in any case where the  12        addition of the inflammatory reaction to a particle  13        could be perceived against a tissue reaction of the  14        implanted tape itself would be insignificant and  15        unappreciable.  16       BY MR. THORNBURGH:  17       Q. General scientific principle is when  18        you increase the surface area, you increase the  19        inflammatory response, right?  20       MR. THOMAS: Object to the form of  21        the question.  22       THE WITNESS: That's a general  23        scientific principle.  24       MR. THORNBURGH: Off the record for a  25        minute.</p>

## Confidential - Subject to Protective Order

Page 547	Page 549
<p>1                   THE VIDEOGRAPHER: Off the video 2 record, 4:14. 3                   (Short break.) 4                   THE VIDEOGRAPHER: Back on the video 5 record, 4:25. 6                   BY MR. THORNBURGH: 7                   Q. Dr. Barbolt, the studies that you've 8 listed for all of the designated topics that you 9 believed were relevant to those topics you included 10 within the list that we marked on the first day as 11 2241, correct? 12                   MR. THOMAS: We marked the list -- 13                   MR. THORNBURGH: Oh, I'm sorry. I 14 apologize. Maybe we ought to do that. The problem 15 is I have handwriting on mine. I didn't bring 16 another copy. 17                   BY MR. THORNBURGH: 18                   Q. Doctor -- 19                   MR. THORNBURGH: Let's go off the 20 record for a sec. 21                   (Whereupon, a discussion was held off 22 the record.) 23                   THE VIDEOGRAPHER: 4:26, off the 24 video record. 25                   (Short break.)</p>	<p>1                   was created after a review of that entire list of 2 both literature searches of R&amp;D central file. But, 3 clearly, I didn't type all this and organize this 4 and so on and so forth. 5                   Q. Now, are you -- you didn't come 6 prepared to talk about the number of the opinions 7 that you expressed in your expert report, correct? 8                   MR. THOMAS: Object to the form of 9 the question. 10                   THE WITNESS: That was not the 11 intention. 12                   BY MR. THORNBURGH: 13                   Q. For instance, you didn't come 14 prepared to talk about the biocompatibility or lack 15 thereof of a mismatched mesh, right? 16                   MR. THOMAS: Object to the form of 17 the question. What is that? 18                   MR. THORNBURGH: Language in his 19 expert report. 20                   MR. THOMAS: Sorry. 21                   THE WITNESS: Mismatched mesh? 22                   BY MR. THORNBURGH: 23                   Q. Yes. 24                   A. A lot of the topics in my expert 25 report are along the same lines of the topics that</p>
<p style="text-align: center;">Page 548</p> <p>1                   THE VIDEOGRAPHER: Back on the video 2 record. It's 4:42. 3                   This begins Tape Number 5, Volume 2 4 of the videotaped deposition of Dr. Thomas A. 5 Barbolt. 6                   BY MR. THORNBURGH: 7                   Q. Dr. Barbolt, we're going to mark as 8 an exhibit a list of studies that you chose which 9 you believe were relevant to the 30(b)(6) topics 10 that you were designated to discuss. It's been 11 marked as 2262. 12                   (Document marked for identification 13 as Exhibit T-2262.) 14                   BY MR. THORNBURGH: 15                   Q. Doctor, the 2262 list of studies are 16 the studies that you chose that you believe were 17 relevant to the topics you were designated to 18 discuss, correct? 19                   A. Yes, that's correct. 20                   Q. Did anybody help you compile this 21 list? 22                   A. Yes. 23                   Q. Who helped you compile the list? 24                   A. Counsel's staff or Ethicon personnel. 25 Ethicon personnel created the first list. This list</p>	<p style="text-align: center;">Page 550</p> <p>1                   we've been discussing here. There is a great deal 2 of overlap. 3                   Q. Well, in your expert report, on 4 Page 12 of 27, you say: Movement of a mesh from its 5 original site of implantation can result from 6 compliance mismatching. This is a mesh that is 7 stiffer in terms of bending rigidity than 8 surrounding the tissue. 9                   Are you prepared to talk about 10 Ethicon internal documents; for instance, documents 11 from Dr. Trzewik regarding the bio -- the 12 biocompatibility or mismatching of mesh? 13                   A. Yeah. I'd have to look at that -- 14 I'd have to look at my expert report and then look 15 at the reference to that particular article. 16                   Q. Did you look at any of Dr. Trzewik's 17 internal documents before you came here today? 18                   MR. THOMAS: To prepare for this 19 deposition today? 20                   MR. THORNBURGH: Yes. 21                   BY MR. THORNBURGH: 22                   Q. I mean, if you want to go there, I'll 23 go there. I'm ready to go there. If you want to 24 talk about the tissue and the biomechanical 25 properties of tissue compared to the biomechanical</p>

## Confidential - Subject to Protective Order

Page 551	Page 553
<p>1 properties of mesh, which can cause increased  2 inflammatory response as a result of mismatching, I  3 am ready to do it. But I need to know from you if  4 you're ready to do it.</p> <p>5 A. Well, I came prepared to talk about  6 the preclinical studies that we've got in front of  7 us and behind us.</p> <p>8 MR. THOMAS: Short answer is no.</p> <p>9 MR. THORNBURGH: Okay.</p> <p>10 BY MR. THORNBURGH:</p> <p>11 Q. And that's one example of expert  12 opinions that you have that you're not prepared to  13 discuss today, correct?</p> <p>14 A. That's correct.</p> <p>15 MR. THORNBURGH: Are you going to  16 give me a date where we can take Dr. Barbolt's  17 expert deposition?</p> <p>18 MR. THOMAS: To the extent that we  19 intend to offer Dr. Barbolt in areas beyond the  20 scope of the 30(b)(6) designation, yes.</p> <p>21 MR. THORNBURGH: Well, I mean, I have  22 all kinds of external Ethicon -- external scientific  23 articles on porosity.</p> <p>24 Now, porosity was an issue regarding  25 preclinical studies, but he's offering opinions</p>	<p>1 trial, which is coming up.</p> <p>2 MR. THOMAS: You owe me a jordi date,  3 too.</p> <p>4 MR. THORNBURGH: Well, I'm trying --  5 you just let me know yesterday, I think it was, that  6 the date I proposed was not a good date, so I am  7 trying to get another date for you. I hope to have  8 that by today or tomorrow. Okay?</p> <p>9 MR. THOMAS: Okay.</p> <p>10 MR. THORNBURGH: I am going to give  11 you a date before the trial.</p> <p>12 MR. THOMAS: Okay. Are you finished  13 now?</p> <p>14 MR. THORNBURGH: No. I'm just trying  15 to get some stuff on the record.</p> <p>16 MR. THOMAS: What was the number of  17 that last exhibit?</p> <p>18 MR. THORNBURGH: 2262.</p> <p>19 MR. THOMAS: Thank you.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. Do you believe Ethicon should have  22 done anything different in terms of the language  23 they used in the IFU that we looked at regarding  24 degradation and the inflammatory response?</p> <p>25 MR. THOMAS: Object to the form;</p>
<p>1 regarding pore size in his expert report. I want to  2 have an opportunity to cross-examine him on non --  3 both internal and external documents that we have.</p> <p>4 Now, if he's prepared to do that now,  5 because we talked about porosity, then I'll do that.  6 But if you're going to offer him up for an expert  7 deposition on those issues, then I will reserve that  8 for another time.</p> <p>9 MR. THOMAS: I think that the option  10 is to reserve for another time, and we'll decide  11 whether another time is necessary. And if we don't  12 agree, I think the magistrate has already spoken to  13 that. But I feel confident we'll agree.</p> <p>14 MR. THORNBURGH: So I don't need to  15 go through like degradation studies and --</p> <p>16 MR. THOMAS: No.</p> <p>17 MR. THORNBURGH: -- studies that he  18 wasn't prepared to talk about?</p> <p>19 MR. THOMAS: Correct.</p> <p>20 MR. THORNBURGH: We can raise that at  21 another time and, hopefully, we can agree on a time  22 before --</p> <p>23 MR. THOMAS: A time and scope. I  24 agree.</p> <p>25 MR. THORNBURGH: A time before the</p>	<p>1 scope.</p> <p>2 THE WITNESS: I am here to represent  3 Ethicon with respect to these preclinical studies  4 and their results.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. Based on the preclinical studies,  7 including the five-year and seven-year data from the  8 ten-year dog study and the other studies that showed  9 chronic inflammation, do you believe that Ethicon  10 should have done anything different, added any  11 additional language, such that -- any additional  12 language such that information would have been  13 disclosed to physicians in the IFU?</p> <p>14 MR. THOMAS: Object to the form of  15 the question.</p> <p>16 He's asking you from a preclinical  17 perspective whether you would change the IFU.</p> <p>18 THE WITNESS: Yes. As I indicated,  19 the IFU is not the responsibility of preclinical.</p> <p>20 It is responsibility of medical  21 affairs folks, the regulatory folks, taking input  22 from all areas of product development, including  23 preclinical.</p> <p>24 MR. THOMAS: He's asking you from a  25 perspective of preclinical whether you would, from</p>

## Confidential - Subject to Protective Order

Page 555	Page 557
<p>1 your preclinical experience, when you review the  2 preclinical studies under the designations that have  3 been made, whether you as Ethicon would change the  4 IFU from a preclinical perspective.</p> <p>5 THE WITNESS: No.</p> <p>6 BY MR. THORNBURGH:</p> <p>7 Q. Adding information in the IFU  8 regarding the surface degradation is not a change  9 that you think Ethicon should have made?</p> <p>10 MR. THOMAS: Object to the form of  11 the question.</p> <p>12 THE WITNESS: It's not useful  13 information for the surgeon when there is no impact  14 on molecular weight and tensile strength of the  15 fiber.</p> <p>16 BY MR. THORNBURGH:</p> <p>17 Q. Adding information to the IFU from  18 a -- regarding the chronic inflammatory response  19 that you observed in all of your preclinical  20 studies, you don't believe that more definitive  21 language regarding the chronic inflammatory response  22 should have been added to the IFU?</p> <p>23 MR. THOMAS: Object to the form of  24 the question.</p> <p>25 THE WITNESS: The tissue reaction to</p>	<p>1 A. No, I don't think that's necessary.  2 I think all surgeons know that a permanent implant  3 is going to be associated with some low level of  4 chronic inflammatory reaction for the life of the  5 patient.</p> <p>6 MR. THORNBURGH: Move to strike after  7 the word, no.</p> <p>8 Pass the witness and reserve some  9 time for cross-examination.</p> <p>10 MR. THOMAS: Let's take a break,  11 please.</p> <p>12 THE VIDEOGRAPHER: It's 4:53. Off  13 the video record.</p> <p>14 (Short break.)</p> <p>15 THE VIDEOGRAPHER: Back on the video  16 record, 5:17.</p> <p>17 - - -</p> <p>18 EXAMINATION</p> <p>19 - - -</p> <p>20 BY MR. THOMAS:</p> <p>21 Q. Dr. Barbolt, would you pick up  22 Exhibit 2262, please.</p> <p>23 A. Okay.</p> <p>24 Q. And Exhibit 2262 is titled,  25 "Deposition Subject Matter." And this is a document</p>
<p style="text-align: center;">Page 556</p> <p>1 polypropylene-based material is well understood.  2 It's discussed in detail, including the chronic  3 inflammatory reaction to Prolene sutures in the  4 19 -- 1960s NDA submission.</p> <p>5 The whole history of studies from the  6 mid '60s to current day has demonstrated a very  7 consistent tissue reaction profile to implanted  8 polypropylene-based devices.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. So there is a chronic inflammatory  11 response, not a temporary one, correct?</p> <p>12 MR. THOMAS: Object to the form of  13 the question.</p> <p>14 THE WITNESS: It's well understood  15 that the initial reaction is transient and can verge  16 to a chronic inflammatory reaction and a fibrotic  17 response with more or less inflammatory cell  18 infiltrate, well documented in all the implantation  19 studies.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. You don't believe that Ethicon should  22 have added additional language in the IFU that  23 discussed the chronic inflammatory response  24 specifically using the word, chronic inflammatory  25 response, in the IFU?</p>	<p style="text-align: center;">Page 558</p> <p>1 that you described towards the end of your  2 deposition where you identified for counsel for  3 plaintiffs all of those topics for which you  4 gathered information to be responsive to the  5 questions today. Correct?</p> <p>6 A. Yes, that's correct.</p> <p>7 Q. And this multi-page document  8 obviously lists many studies. Do you have those  9 studies with you here today?</p> <p>10 A. Yes. They're in the various binders  11 that you see around that are entitled with the  12 specific subject matter topics as are listed in  13 these sheets.</p> <p>14 Q. How many boxes of binders did you  15 bring to the deposition today?</p> <p>16 A. Oh, I think there was 18 or 20.</p> <p>17 Q. 18 or 20 binders?</p> <p>18 A. Binders.</p> <p>19 Q. The first one on the list is for the  20 specifics of all testing related to the TVT  21 products.</p> <p>22 Now, you understand there are  23 multiple TVT products?</p> <p>24 A. Yes.</p> <p>25 Q. And so you went back and searched for</p>

## Confidential - Subject to Protective Order

Page 559	Page 561
<p>1 all the testing that you could find for all of the  2 TTVT products?</p> <p>3 A. Yes. Each of the individual TTVT  4 products are -- and the data supporting their  5 preclinical studies are assembled in individual  6 binders and titled according to the TTVT product.</p> <p>7 Q. During the design and development  8 stages, including but not limited to, at least for  9 this section, it's porosity testing, particle loss,  10 degradation, and leaching, correct?</p> <p>11 A. Yes.</p> <p>12 Q. And the first one that we have listed  13 here is degradation. And you have notebooks here  14 for degradation?</p> <p>15 A. Yes.</p> <p>16 Q. Correct?</p> <p>17 And those notebooks contain 46  18 different documents?</p> <p>19 A. That's correct. There are 40  20 different -- 46 different studies or documents  21 related to potential degradation of TTVT products.</p> <p>22 Q. Now, the TTVT, as you've explained in  23 your examination, didn't come into existence until  24 the late '90s, right?</p> <p>25 A. That's right. The work started in</p>	<p>1 the scope.</p> <p>2 THE WITNESS: Yes.</p> <p>3 BY MR. THOMAS:</p> <p>4 Q. And the first five studies in your  5 degradation section are studies submitted to the FDA  6 in connection with the Prolene suture NDA, correct?</p> <p>7 A. That's correct.</p> <p>8 Q. And let's talk about those briefly.</p> <p>9 Study of tissue reaction to the colorless and  10 pigmented monofilament polypropylene suture in the  11 rat, rabbit, and the dog.</p> <p>12 Just tell me briefly what those  13 studies are.</p> <p>14 A. These were tissue reaction studies in  15 three species of animals, with colored and  16 non-colored suture, looking at tissue reaction over  17 time.</p> <p>18 Q. And how long were those studies?</p> <p>19 A. The rat study was two years. That's  20 the lifetime of a rat.</p> <p>21 The dog study was two years. And the  22 rabbit study was 90 days.</p> <p>23 Q. And are those considered long-term  24 studies?</p> <p>25 A. The two-year rat as a lifetime study</p>
<p style="text-align: center;">Page 560</p> <p>1 the '97 time frame or so, and then I think the  2 510(k) approval was in early 1998.</p> <p>3 Q. And the information that you list in  4 response to the degradation designation begins in  5 1964; is that right?</p> <p>6 A. Yes, that's correct.</p> <p>7 Q. And it runs in chronological order  8 all the way up until 2007, right?</p> <p>9 A. Yes, that's correct.</p> <p>10 Q. Why did you include studies that  11 predated the TTVT?</p> <p>12 A. Well, the material used to  13 manufacture TTVT mesh is Prolene polypropylene  14 filaments. And a great deal of work was done in the  15 mid '60s and beyond, demonstrating biocompatibility  16 of that product and essentially received FDA  17 approval.</p> <p>18 Q. What is an NDA?</p> <p>19 A. An NDA is a new drug application.</p> <p>20 And at the time of the development of Prolene  21 suture, polypropylene sutures were considered drugs.</p> <p>22 Q. And did Ethicon go through a new drug  23 application in order to have FDA approve the  24 polypropylene suture that's now used in TTVT mesh?</p> <p>25 MR. THORNBURGH: Objection; beyond</p>	<p style="text-align: center;">Page 562</p> <p>1 is certainly a long-term study, as with the dog  2 study of a two-year duration.</p> <p>3 Q. And what's the purpose of doing a  4 tissue reaction study to a polypropylene suture in  5 an NDA?</p> <p>6 A. So for the purposes of a suture, the  7 most important thing that needs to be determined is  8 the tissue reaction of the material over time.</p> <p>9 Q. And you have reviewed the tissue  10 reaction studies from the NDA?</p> <p>11 A. Yes.</p> <p>12 Q. And are the tissue reaction findings  13 for the polypropylene suture approved by the FDA  14 similar to the findings that you have reviewed with  15 respect to Prolene mesh?</p> <p>16 MR. THORNBURGH: Objection to the use  17 of the word, approved, as well as outside the scope  18 of his designation.</p> <p>19 THE WITNESS: The tissue reaction is  20 very similar.</p> <p>21 BY MR. THOMAS:</p> <p>22 Q. Okay. And you understand that in  23 order for Ethicon to be able to market this  24 polypropylene suture, known as Prolene suture, the  25 FDA had to approve the NDA?</p>

## Confidential - Subject to Protective Order

Page 563	Page 565
<p>1                   MR. THORNBURGH: Objection; move to 2 strike.</p> <p>3                   THE WITNESS: Yes. That's an 4 approval process. It's not like a 510(k) clearance.</p> <p>5 BY MR. THOMAS:</p> <p>6                   Q. And as a matter of fact, in order to 7 market this suture, this Prolene suture, Ethicon had 8 to get approval from the FDA for the language that 9 went in the IFU for the Prolene suture?</p> <p>10                  MR. THORNBURGH: Objection.</p> <p>11 BY MR. THOMAS:</p> <p>12                  Q. Did you know that?</p> <p>13                  MR. THORNBURGH: Objection; lack of 14 foundation, outside the scope.</p> <p>15                  THE WITNESS: That's correct.</p> <p>16 BY MR. THOMAS:</p> <p>17                  Q. And the language -- strike that. 18                  So after the NDA studies, you pick up 19 a number of studies that begin in the '70s and go 20 through the '80s, into the '90s, all the way up to 21 the time when you start involving testing for the 22 TTVT device, correct?</p> <p>23                  A. Yes.</p> <p>24                  Q. And why did you include those studies 25 in your degradation section?</p>	<p>1                   THE WITNESS: No. The tissue 2 reaction is pretty consistent over time. And in 3 many studies, there's a diminution of the tissue 4 reaction over time. The kinds of qualitative 5 characteristics seen with Prolene polypropylene 6 suture are the very same kind of qualitative changes 7 seen around filaments of the Prolene polypropylene 8 mesh.</p> <p>9 BY MR. THOMAS:</p> <p>10                  Q. And in any of the studies that you've 11 identified in the 46 studies in the degradation 12 section on T-2262, did you identify any failure 13 issues with the mesh or the sutures due to any 14 degradation of the mesh?</p> <p>15                  A. No. And I would point to Tab 5, 16 where for the purposes of the Prolene suture NDA, 17 there was a two-year study where Prolene suture was 18 implanted and tensile testing was conducted, and 19 there were no consistent changes in the strength of 20 suture over time.</p> <p>21                  Q. So in these 46 studies that you were 22 able to retrieve and review, did you find any issues 23 with degradation of the polypropylene suture that 24 makes up both Prolene suture and Prolene mesh to 25 cause you any concern in the preclinical area about</p>
<p style="text-align: center;">Page 564</p> <p>1                  A. Those studies are part of the 2 database that -- that shows that the tissue reaction 3 to Prolene polypropylene filaments is very 4 consistent over time.</p> <p>5                  Q. Now, in -- in the studies that have 6 been conducted since 1964, when you conduct a tissue 7 reaction study such as those listed in T-2262, is 8 degradation something that's always a component of a 9 study?</p> <p>10                 A. Yes, for absorbable or non-absorbable 11 sutures. In this case Prolene suture is a 12 non-absorbable suture. One needs to monitor what 13 the appearance of the suture looks like over time so 14 that one can conclude there's no visible evidence of 15 degradation from these tissue reaction studies. 16 That's always a component of a tissue reaction 17 study.</p> <p>18                 Q. I am going to get into the seven-year 19 dog study here in more detail in a little bit. But 20 from any of the 46 studies that you identified in 21 the degradation studies that you have brought here 22 with you today, did you find any degradation of any 23 Prolene suture or Prolene mesh that you saw created 24 an increased inflammatory response?</p> <p>25                 MR. THORNBURGH: Objection.</p>	<p style="text-align: center;">Page 566</p> <p>1                  any adverse effects from the use of that suture due 2 to degradation?</p> <p>3                  MR. THORNBURGH: Objection.</p> <p>4                  THE WITNESS: No.</p> <p>5 BY MR. THOMAS:</p> <p>6                  Q. The next section in 2262 is called 7 leaching. And, again, this is the specifics of all 8 testing related to TTVT products during the design 9 and development stages, including but not limited to 10 leaching.</p> <p>11                  And what is leaching, for the jury?</p> <p>12                 A. Leaching is the movement of a 13 substance or substances from the body of an implant 14 to the surrounding tissues.</p> <p>15                 Q. Now, the leaching section of your 16 disclosure identifies 91 different documents in 17 response to the leaching.</p> <p>18                  Why are there so many documents that 19 you identified in response to the leaching issue?</p> <p>20                 A. Every implantation study is an 21 opportunity to evaluate any potential consequence of 22 leaching from an implanted device. And there are, 23 as I recall, some studies in here that look at 24 extracts of the device and administration of those 25 extracts to animals to look at whether or not there</p>

## Confidential - Subject to Protective Order

Page 567	Page 569
<p>1 is adverse reactions, for example, an intracutaneous 2 reactivity test. 3       And these studies are conducted for 4 products in variation -- in products over time and 5 for many of the iterations of TVT mesh. 6       Q. Now, you have different categories of 7 documents in the leaching section of this exhibit. 8 You have one section called in vitro. What is that? 9       A. These are studies where the device is 10 extracted to maximize leachables, and in this case 11 you would say leachables/extractables, because 12 sometimes the extraction mediums can accelerate the 13 movement of substances from a mesh to the 14 surrounding tissues. 15       These extracts are then tested in in 16 vitro systems which are very sensitive. 17       Q. And what is an in vitro system? 18       A. In vitro system is a cell culture 19 system. And with respect to these studies, they 20 would be known as in vitro cytotoxicity assays. 21       Q. They're in a laboratory dish? 22       A. That's correct. 23       Q. Okay. 24       A. They are cells in culture and petri 25 dishes, or nowadays in wells of 96 well plates where</p>	<p>1 animals. And any leachables that would have adverse 2 impact to the surrounding tissues would be revealed 3 in a histomorphological evaluation of the section. 4       Q. Now, counsel made a number of 5 questions about the fact that leaching is not a 6 primary or called out endpoint in each of these 7 studies. 8       Is leaching something that a 9 pathologist looks for in any in vivo study? 10       A. Absolutely. A pathologist would be 11 looking at the tissue reaction at the interface of 12 the implant and the surrounding tissues. And if 13 there were increased reaction, there would be a 14 result of either the implanted material or any 15 leachables or a combination of both. 16       Q. Now, the leachables we've talked 17 about include the additive package that you were 18 asked a number of questions about, correct? 19       A. Yes. 20       Q. The Santonox R, the DLTP, and the 21 others in the John Karl memorandum, do you remember 22 those? 23       A. Yes, that's correct. 24       Q. And those additives have been in the 25 product since the beginning, as that memorandum</p>
Page 568	Page 570
<p>1 cells are incubated, and then the extracts are added 2 to the cells. 3       And then an evaluation is made, as we 4 discussed earlier, whether or not there's any impact 5 on cell viability in accordance with standard USP 6 scoring scheme, as we discussed earlier. 7       Q. If we look at your chart for 8 leaching, beginning with Number 7 all the way 9 through Number 34, you have in vitro studies that 10 you've reviewed for the cytotoxicity of Prolene, 11 correct? 12       A. Yes, that's correct. 13       Q. And you reviewed and prepared to 14 testify about each of those studies, to talk about 15 how they relate to the leaching issues, if any, 16 associated with Prolene suture in mesh? 17       A. Yeah, that's correct. And we have 18 talked about some of those today in the context of 19 TVT mesh and the 510(k) submission of TVT original. 20       Q. Now, beginning with Number 35 all the 21 way to Number 91, you have in vivo studies for 22 leaching. What are the in vivo studies for 23 leaching? 24       A. These -- these would be implantation 25 studies where the materials are implanted in</p>	<p>1 described. Do you remember that? 2       A. That's correct. 3       Q. And the in vivo section which begins 4 on Number 35. Number 35 is an NDA study that's 5 March 10, 1964, correct? 6       A. Yes. 7       Q. So from March 10, 1964 all the way up 8 to March 11, 2010, you have in vivo studies where 9 you've looked at the effect of any leachables on 10 these in vivo studies? 11       A. That's correct. 12       Q. And the additives in the suture 13 package that we talked about before at some length, 14 all those additives were approved by FDA, weren't 15 they? 16       MR. THORNBURGH: Objection. 17       THE WITNESS: FDA approved the 18 original product, Prolene suture. And that suture 19 contained those additives. 20 BY MR. THOMAS: 21       Q. And in any of the in vivo studies 22 beginning on Page 35 -- on Number 35, all the way up 23 to 91, did you find any adverse effects due to 24 leaching from the Prolene suture or the Prolene mesh 25 in those results?</p>

## Confidential - Subject to Protective Order

Page 571	Page 573
<p>1        A.    No.</p> <p>2        Q.    Now, why are the results from in 3    vitro tests different from the results in in vivo 4    tests sometimes?</p> <p>5        A.    In vitro tests are very quick to 6    conduct. They are relatively inexpensive. However, 7    they only provide directional information and not 8    definitive information.</p> <p>9        Q.    What do you mean by that?</p> <p>10      A.    Well, they are studies conducted 11    outside the body. Artificial environment.</p> <p>12      Q.    And if you have a positive 13    cytotoxicity test in vitro, what does that mean to 14    the question of whether the substance is going to be 15    cytotoxic in vivo or in an animal?</p> <p>16      A.    Again, that would be a watch owl, 17    that is a directional information. And then you 18    would need to do more relevant in vivo studies to 19    determine if the in vitro cytotoxicity translated it 20    into any in vivo cytotoxicity or any adverse impact 21    on wound healing.</p> <p>22      Q.    And in this case, as discussed in 23    your direct examination, there was a positive 24    cytotoxicity test in vitro for the TVT device, 25    correct?</p>	<p>1        A.    The tissue reaction to the TVT mesh 2    was very comparable to the non-in vitro cytotoxic 3    Prolene flat mesh, in that there were -- was no 4    impact on wound healing over time on the face of the 5    implant.</p> <p>6        Q.    And what does that mean in terms of 7    whether there is a cytotoxic effect of Prolene mesh 8    in vivo?</p> <p>9        A.    Now, the least impact might be 10    delayed wound healing, and that was not observed. 11      If there were a more severe impact as 12    a result of leachables, that would have translated 13    into an increased tissue reaction.</p> <p>14      In other words, rather than minimal 15    to mild reactions, we might have seen moderate to 16    marked reactions.</p> <p>17      Q.    Was there any evidence in this 28-day 18    rat study that you conducted to determine the extent 19    to which the TVT mesh in the Ulmsten device was 20    cytotoxic, that it was, in fact, cytotoxic in vivo? 21      Any evidence at all?</p> <p>22      A.    No, there was not.</p> <p>23      Q.    Now, in the category that we have for 24    that section, it's Category 4, and you don't need to 25    go to it unless you want to.</p>
Page 572	Page 574
<p>1        A.    That's correct.</p> <p>2        MR. THORNBURGH: Objection. More 3    than one.</p> <p>4    BY MR. THOMAS:</p> <p>5        Q.    So what did Ethicon do when it had 6    its positive cytotoxicity response to follow up on 7    that?</p> <p>8        A.    Ethicon conducted a 28-day study in 9    rats, looking at the implantation -- the tissue 10    reaction to the -- or after the implantation of TVT 11    mesh.</p> <p>12      Q.    You were designated as the person 13    most knowledgeable regarding a 28-day intramuscular 14    tissue reaction study in rats of polypropylene mesh 15    in the TVT (Ulmsten) device (PSE 97-0197); is that 16    correct?</p> <p>17      A.    Yes.</p> <p>18      Q.    And that's the study to which you 19    just referred where Ethicon actually did an 20    implantation study in rats to determine the extent 21    to which the TVT mesh was cytotoxic in vivo, 22    correct?</p> <p>23      A.    That's correct.</p> <p>24      Q.    And what was the finding of that 25    study?</p>	<p>1        A.    Okay.</p> <p>2        Q.    There are three other -- why don't 3    you go ahead. It's about four from the back.</p> <p>4        A.    Four from the back. Okay. Yes. 5    There's five tabs.</p> <p>6        Q.    And the first one is a study that we 7    just discussed, the 28-day rat study?</p> <p>8        A.    Yes, that's correct.</p> <p>9        Q.    And that was a GLP study, correct?</p> <p>10      A.    Yes.</p> <p>11      Q.    What does it mean to be a GLP study?</p> <p>12      A.    A GLP study would be a study 13    conducted in compliance with the FDA good laboratory 14    practices regulations.</p> <p>15      As we discussed earlier, all studies 16    are conducted in accordance with SOPs and standard 17    policies and procedures.</p> <p>18      An FDA GLP study has an additional 19    level of scrutiny, and that is outside, independent 20    review of various phases of a study and a review of 21    the final report in comparison to the raw data to 22    ensure that they reflect individual animal data.</p> <p>23      Q.    The next three entries in Category 4, 24    where you're the person most knowledgeable about 25    this 28-day intramuscular study that we've just been</p>

Confidential - Subject to Protective Order

## Confidential - Subject to Protective Order

Page 579	Page 581
<p>1           THE WITNESS: Yes, that's correct.</p> <p>2   In the same manner that we've discussed and</p> <p>3   leveraged that early data on poly -- Prolene</p> <p>4   polypropylene fiber for suture, it's also relevant</p> <p>5   for Prolene meshes and TVT.</p> <p>6   BY MR. THOMAS:</p> <p>7       Q. And does the biocompatibility risk</p> <p>8   assessment for the Gynecare TTV product family of</p> <p>9   May of 2013 include a leaching component?</p> <p>10      A. Yes.</p> <p>11      Q. And so this product -- the studies</p> <p>12   and the documents that you have in the leaching</p> <p>13   section of your documents that you brought with you</p> <p>14   today covers some 49 years, correct?</p> <p>15      MR. THORNBURGH: Objection.</p> <p>16      THE WITNESS: Yes.</p> <p>17   BY MR. THOMAS:</p> <p>18       Q. And in those 49 years of 91</p> <p>19   documents, did you find anything that suggests that</p> <p>20   there's anything leaching from polypropylene</p> <p>21   sutures -- excuse me. Strike that.</p> <p>22       In your 49 years of documents, you</p> <p>23   covered some 91 different documents. Did you find</p> <p>24   any evidence of any leaching in vivo that led to any</p> <p>25   adverse reaction in a preclinical study?</p>	<p>1           testing?</p> <p>2        A. Yes.</p> <p>3        Q. And why did you pick the documents</p> <p>4   that you have here, beginning in 1964, the 38</p> <p>5   documents, going all the way up to 2007? Why did</p> <p>6   you include those?</p> <p>7        A. Particles were observed in the</p> <p>8   Prolene suture NDA submission. And as I pointed out</p> <p>9   this morning, they resulted in an inflammatory</p> <p>10   reaction very similar to that reaction around the</p> <p>11   filaments of the suture.</p> <p>12       Q. You talk about fragments and you've</p> <p>13   talked about particles. Are fragments and particles</p> <p>14   different?</p> <p>15       A. As I mentioned this morning, I see a</p> <p>16   big difference there.</p> <p>17       A fragment of a suture is likely to</p> <p>18   have been related to the swaging process or the</p> <p>19   cutting lengths of suture, or a fragment of suture</p> <p>20   gets attached to the suture and then gets implanted</p> <p>21   with it.</p> <p>22       That's different than the</p> <p>23   microparticulates that we discussed earlier, looking</p> <p>24   at data from the seven-year dog study.</p> <p>25       Q. And so the 38 studies that you've</p>
<p style="text-align: center;">Page 580</p> <p>1           MR. THORNBURGH: Objection.</p> <p>2        THE WITNESS: No.</p> <p>3   BY MR. THOMAS:</p> <p>4       Q. The next section that I have in this</p> <p>5   disclosure, which is T-2262, is the specifics of all</p> <p>6   testing related to TTV products during the design</p> <p>7   and development stages, including particle loss.</p> <p>8       Now, tell me the difference between</p> <p>9   the clinical and the preclinical analysis of</p> <p>10   particle loss.</p> <p>11      MR. THORNBURGH: Objection.</p> <p>12      THE WITNESS: The preclinical</p> <p>13   assessment of particle loss is one that can be done</p> <p>14   in any implantation study where the implant is</p> <p>15   visualized against the surrounding tissue. And if</p> <p>16   there are any particulates there, they would be</p> <p>17   observable.</p> <p>18       I am not sure about the clinical</p> <p>19   arena. I don't know that I can speak to that.</p> <p>20   BY MR. THOMAS:</p> <p>21       Q. Okay. The clinical arena involves</p> <p>22   humans, and that's not work that you do?</p> <p>23       A. That's correct.</p> <p>24       Q. And you are aware of the particle</p> <p>25   loss issues insofar as they relate to preclinical</p>	<p style="text-align: center;">Page 582</p> <p>1           included in your section of particle loss from the</p> <p>2   period, 1964 to 2007, you've looked for the extent</p> <p>3   to which there's been any adverse consequences noted</p> <p>4   in preclinical studies from any kind of particle</p> <p>5   loss of sutures and mesh?</p> <p>6       A. Yes, although fragments are noted in</p> <p>7   the NDA submission and in the Postlethwait study that</p> <p>8   we discussed earlier. In the early going, in the</p> <p>9   development of Prolene suture, I've not seen</p> <p>10   personally in any of the implantation studies that</p> <p>11   I've conducted any sort of fragment of filament next</p> <p>12   to a filament in an implantation study.</p> <p>13       Q. And you talked before about the</p> <p>14   particle in the NDA study and the kind of reaction</p> <p>15   that -- tissue reaction with respect to that</p> <p>16   particle.</p> <p>17       With the particle in the NDA study,</p> <p>18   did you find any adverse inflammation or tissue</p> <p>19   reaction that had any consequences to you for a</p> <p>20   preclinical perspective?</p> <p>21       A. No.</p> <p>22       Q. Why?</p> <p>23       A. It was the same kind of reaction</p> <p>24   around the fragment as there was around the suture.</p> <p>25       Think about a tissue reaction around</p>

## Confidential - Subject to Protective Order

Page 583	Page 585
<p>1 the earth and a tissue reaction around the earth and  2 moon. The tissue reaction around the earth is  3 around the interface of the earth and the  4 atmosphere. And then there is the moon on the side  5 of the earth with a very similar reaction around its  6 interface with substance and atmosphere.</p> <p>7 Q. You answered the question at least  8 seven or eight times today about whether more  9 material implanted leads to an increased tissue  10 reaction, and you said as a general proposition,  11 that's true. Is that fair?</p> <p>12 A. Yes, I think so. I think that's a  13 general principle. Again, as I also mentioned, the  14 details and particulars need to be determined on the  15 basis of an implantation study.</p> <p>16 Q. And -- and how much additional  17 material -- strike that.</p> <p>18 Are you able to evaluate the extent  19 to which additional material creates a tissue  20 response that's unacceptable from a preclinical  21 study?</p> <p>22 A. Yes. I think in every implantation  23 study, one can make that determination.</p> <p>24 Q. In your evaluation of all of the  25 studies in the particle loss section of your</p>	<p>1 the Pariente study.</p> <p>2 A. I've got the 2260. I'm looking for  3 2130.</p> <p>4 Q. I'll get this copy to you.</p> <p>5 A. Maybe it was discussed yesterday, and  6 it's in this stack, yeah. I can probably get it,  7 David.</p> <p>8 Q. It's all right. I've got another  9 copy.</p> <p>10 The Pariente study is the particle  11 loss study that counsel discussed with you at length  12 at T-2260.</p> <p>13 If you go to the first page of  14 T-2260, down in the lower right-hand corner, it  15 reads: Mechanical testing was performed with a  16 7-centimeter length sample (n=5) on an Instron 4466  17 with a 500-Newtons sensor using the software Series  18 IX-7 to program the setup.</p> <p>19 What is an Instron machine?</p> <p>20 A. An Instron machine is a piece of  21 equipment that can determine the tensile strength of  22 a fiber by pulling at both ends and determining the  23 strength at -- the force at which it breaks.</p> <p>24 Q. And how did Pariente use an Instron  25 machine to test the extent to which particles were</p>
Page 584	Page 586
<p>1 designation, the 38 studies over 43 years, did you  2 find any unacceptable tissue response to any  3 particles in those studies?</p> <p>4 A. Yeah. The only --</p> <p>5 MR. THORNBURGH: Objection.</p> <p>6 THE WITNESS: The only studies that  7 even talk about particles or fragments is the NDA  8 work in a study done in 2002, Tab 33, that was done  9 specifically to look at whether or not particles  10 would be present after implantation of lengths of  11 TTV tape. And, in fact, none were observed.</p> <p>12 BY MR. THOMAS:</p> <p>13 Q. Would you get 2260 in front of you,  14 please. That's the Pariente study. I don't have  15 the number of the rabbit study.</p> <p>16 MR. THOMAS: Do you happen to have  17 that, Dan?</p> <p>18 MR. THORNBURGH: The test number or  19 the exhibit number?</p> <p>20 MR. THOMAS: The exhibit number.</p> <p>21 I do have it. I'm sorry.</p> <p>22 MR. THORNBURGH: 2133.</p> <p>23 BY MR. THOMAS:</p> <p>24 Q. 2133. Can you get 2133 and 2260?  25 2133 is the March 5, 2003 rabbit test, and 2260 is</p>	<p>1 shed from the meshes that they tested?</p> <p>2 A. Well, it looks like he put each mesh  3 on the Instron machine and pulled it until it broke.</p> <p>4 And as I look on Table 1 of that  5 study, it looks like each of the meshes were pulled,  6 as one might expect, a different peak load,  7 depending on their biomechanical characteristics.</p> <p>8 Q. And at what point in this process  9 were particle loss measured? Are you able to tell  10 that?</p> <p>11 A. Could you repeat the question?</p> <p>12 Q. Yes. At what point in this  13 experiment were the particle losses measured?</p> <p>14 A. I think at break.</p> <p>15 Q. Okay.</p> <p>16 A. I think at break. As I look at this  17 Figure 3, there's a break, obviously, and then  18 there's a drop in force because there is a break.</p> <p>19 Q. Is 2260 a preclinical study that  20 Ethicon conducts to evaluate particle loss?</p> <p>21 A. Ethicon did not conduct this study.</p> <p>22 Q. Does Ethicon -- strike that.</p> <p>23 Is this a preclinical study?</p> <p>24 A. This is kind of bench-top  25 biomechanical testing.</p>

## Confidential - Subject to Protective Order

Page 587	Page 589
<p>1       Q.   What is the difference between 2    bench-top biomechanical testing and preclinical 3    testing? 4       A.   Well, I guess it can be considered 5    preclinical because it's done before, you know, the 6    product gets to clinic. But it's different than 7    preclinical in my mind that has to do with in vitro 8    or in vivo experimental studies with products in 9    animals. 10      Q.   Okay. And why is it important to you 11    to measure products in vitro or in vivo in animals? 12      A.   Well, because any bench-top is an 13    artificial environment designed to look at a 14    specific parameter under certain conditions. And in 15    my mind, an in vivo study where there is an 16    implantation of a product, it's more clinically 17    relevant because it simulates the patient 18    environment. 19      Q.   If you look at T-2130, this is the 20    two-week rabbit study; is that correct? 21      A.   2133? 22      Q.   Yes. 23      A.   Yes, a two-week rabbit study. 24      Q.   And if you look at the abstract on 25    Page 3, the objectives of the study were to compare</p>	<p>1       T-2130? 2       A.   That's 33. 2133? 3       Q.   Yes. 4       A.   You keep saying 30. 5       Q.   I'm sorry. Thank you. 6       A.   What was the page number? 7       Q.   Page 35. 8       A.   Okay. 9       Q.   You see under the category, 10      approximate average thickness of fibrous tissue 11      located between the mesh fiber bundles -- strike 12      that. Let me start over again. 13      On Page 35 of Exhibit T-2133, there 14      is a table called "Histological Observations," 15      correct? 16      A.   Yes. 17      Q.   And what are histological 18      observations? 19      A.   These are observations by the study 20      pathologist looking at evidence of tissue reaction 21      and integration and the evidence of fibrosis or any 22      other impact of the surrounding tissues. 23      Q.   And there is a category that's there. 24      It says: Inflammatory cell infiltrates only 25      associated with the mesh.</p>
<p style="text-align: center;">Page 588</p> <p>1    the mechanical strength and histological response of 2    Prolene mesh and Prolene Soft mesh in skeletal 3    muscle of the rabbit, correct? 4       A.   Yes. 5       Q.   And this is the same Prolene mesh 6    that's used in TVT? 7       A.   Yes, that's correct. 8       Q.   And one of the specific endpoints of 9    this study, this two-week rabbit study, T-2130, is 10    to evaluate the extent to which the mesh shed 11    particles inside the rabbit, correct? 12      A.   Yes, that's correct. 13      Q.   And how did the study do that? 14      A.   The implant site was explanted and 15    the tissue reaction was assessed. And, obviously, 16    that would include the implant and any particulates 17    that might be present, as that was one of the called 18    out objectives in this particular experiment, 19    although for me, any implantation study I would be 20    looking for particulates, but this was called out in 21    this study. 22       And so they would look at the tissue 23    reaction to the mesh itself and any evidence of 24    particulates in the surrounding tissue. 25      Q.   If you go to Page 35 of that study,</p>	<p style="text-align: center;">Page 590</p> <p>1       What is that? Right in the middle. 2       A.   Yeah. It looks like they're calling 3    out the tissue reaction associated with the mesh 4    versus a tissue reaction to the skeletal muscle 5    which was injured during the implantation process. 6       Q.   And in the far right-hand corner -- 7    excuse me -- the far right-hand column, there is a 8    specific category for mesh particles within muscle. 9       And for each one of these animals, 10      they specifically look in the histology to try to 11      identify any particles that may have been in the 12      rabbit in two weeks; is that correct? 13      A.   That's correct. 14      Q.   And do they find any particles in the 15      histology for any of the rabbits? 16      A.   No. No particles were observed for 17      any -- for any -- at any implantation site. 18      Q.   And this is a two-week study. Does 19      the fact that this is a two-week study as opposed to 20      a six-month study or a ten-year study have any 21      impact on whether this is a valid study to determine 22      the extent to which mesh particles may be found 23      after implantation of mesh? 24      A.   I think at a two-week post 25      implantation period is sufficient time for a tissue</p>

## Confidential - Subject to Protective Order

Page 591	Page 593
<p>1 reaction and a fibrotic response to occur around any 2 particulate if it were present.</p> <p>3 Q. Okay. And the histology in this 4 two-week rabbit study, 2133, was consistent with all 5 of the other Prolene tissue response tests that 6 you've gotten since 1964, correct?</p> <p>7 A. Yeah, that's correct. If you look at 8 the inflammatory cell --</p> <p>9 MR. THORNBURGH: Objection. Sorry. 10 If you can just give me a hair of a 11 second --</p> <p>12 THE WITNESS: I'm sorry.</p> <p>13 MR. THORNBURGH: -- I'd appreciate 14 it. I've got to get an objection in.</p> <p>15 THE WITNESS: That's fine.</p> <p>16 BY MR. THOMAS:</p> <p>17 Q. Let me read the question again. 18 And the histology in this two-week 19 rabbit study, 2133, was consistent with all of the 20 other Prolene tissue response tests that you've 21 gotten since 1964, correct?</p> <p>22 MR. THORNBURGH: Objection. 23 THE WITNESS: Yes. So if you look in 24 the column, inflammatory cell infiltrates only 25 associated with the mesh, for every mesh, that would</p>	<p>1 observations of encapsulation that were observed 2 that were not confirmed upon histological review. 3 Is that fair?</p> <p>4 A. That's correct. I recall that 5 discussion.</p> <p>6 Q. And you were the person who conducted 7 the histological review, correct?</p> <p>8 A. Yes.</p> <p>9 Q. And how is it that what might appear 10 on a microscopic level to be encapsulation, upon 11 histologic review, may prove something else 12 altogether?</p> <p>13 A. Yeah. The deficiency of a 14 macroscopic observation is that it cannot see 15 through the tissue. For example, if I were to put 16 this piece of paper on top of this -- the title of 17 this document, you would not see that.</p> <p>18 That would be the result of a 19 macroscopic observation. You could only see the 20 surface. And that's a directional information, as I 21 mentioned.</p> <p>22 The histomorphological evaluation of 23 the implant site looks at a cross-section of the 24 implant, top to bottom, through and through. So not 25 only can the pathologist see the surface coating,</p>
Page 592	Page 594
<p>1 be Prolene Soft mesh, Prolene mechanical cut, which 2 is TVT mesh, and Prolene ultrasonic cut mesh, which 3 would be a laboratory-made device to simulate a 4 different cutting process for TVT tape, all of the 5 inflammatory reactions were minimal.</p> <p>6 And, further, if you look at the 7 approximate average thickness of fibrous tissue, 8 what I would call fibrosis in studies that I've 9 read, located between the mesh fiber bundles -- and 10 this is measured -- attempted to be measured in 11 microns, as we've seen in some early report -- 12 pathology assessment schemes -- the results at 7 and 13 14 days are -- there's no distinct encapsulation for 14 any product.</p> <p>15 BY MR. THOMAS:</p> <p>16 Q. What does that mean, no distinct 17 encapsulation?</p> <p>18 A. That the fibrotic response was 19 relatively minimal.</p> <p>20 Q. Let's talk about encapsulation 21 quickly. I am jumping around a little bit, and I 22 apologize.</p> <p>23 In questions yesterday from counsel 24 in -- with respect to T-2242, the exploratory 91-day 25 tissue reaction study, there were some macroscopic</p>	<p>1 but they can see all the other components through 2 the mesh implant.</p> <p>3 Q. Okay. So which is the more valid 4 observation?</p> <p>5 MR. THORNBURGH: Objection. 6 THE WITNESS: The histo -- the 7 histomorphological evaluation is the definitive 8 result.</p> <p>9 BY MR. THOMAS:</p> <p>10 Q. Okay. Sorry to jump around. 11 Going back to the Pariente study, 12 which was T-2260, and the Ethicon two-week rabbit 13 study, which is T-2133, which is the better study 14 from a preclinical perspective for Ethicon to 15 evaluate the safety and efficacy of its product?</p> <p>16 A. I always lean towards in vivo studies 17 to simulate a patient population.</p> <p>18 Q. And what value to you in preclinical 19 context is 2260, the Pariente study?</p> <p>20 A. It's informational.</p> <p>21 Q. Any value to you from a preclinical 22 perspective other than what they state?</p> <p>23 A. No.</p> <p>24 Q. The next section in your disclosure 25 is the porosity section. And the porosity section</p>

## Confidential - Subject to Protective Order

Page 595	Page 597
<p>1 for the development of mesh products only contains  2 12 entries. And counsel inquired at length about  3 why you only had 12 studies to support the porosity  4 testing for the TVT device.</p> <p>5 And I think we've established pretty  6 clearly that T-2247, the 1973 rabbit study, is the  7 first study conducted by Ethicon on Prolene mesh for  8 tissue reaction, correct?</p> <p>9 A. Yes, that's correct.</p> <p>10 Q. And we went through that study at  11 some length.</p> <p>12 Is the tissue reaction profile found  13 in 2247 for Prolene mesh used in TVT consistent with  14 the tissue reaction profile found in other Prolene  15 mesh marketed by Ethicon?</p> <p>16 MR. THORNBURGH: Objection.</p> <p>17 THE WITNESS: First, is that exhibit  18 that you called out the '73 study?</p> <p>19 BY MR. THOMAS:</p> <p>20 Q. Correct.</p> <p>21 A. Then the response would be that the  22 tissue reaction profile reported in the 1973 study  23 represents the kind of tissue reaction seen in  24 studies conducted since then.</p> <p>25 Q. Including the 91-day rat study using</p>	<p>1 perspective?  2 A. No.</p> <p>3 MR. THORNBURGH: Objection.</p> <p>4 BY MR. THOMAS:</p> <p>5 Q. Now, you were questioned at some  6 length about why you haven't done any more porosity  7 studies on 6-mil Prolene mesh since the 1973 study.  8 Why is that?</p> <p>9 A. Well, there's -- in preclinical  10 science, there are limitations on the number of  11 animal studies that can be conducted. USDA animal  12 welfare regulations require experimental  13 institutions to justify the use of additional  14 animals. And part of that justification is making a  15 statement that this work has not been conducted  16 previously, and if so, then further studies are not  17 allowed.</p> <p>18 Q. In the 91-day rat study, T-2242,  19 there is an extensive section and literature  20 research -- literature search contained in the data  21 for that study. Do you recall that?</p> <p>22 A. Yes.</p> <p>23 Q. And why is that literature search set  24 forth in that study?</p> <p>25 A. Part of the --</p>
Page 596	Page 598
<p>1 the 5 mil mesh?</p> <p>2 A. That's correct.</p> <p>3 Q. And in all of the porosity studies  4 that are listed, the 12 that are listed here, the  5 finding of tissue reaction with respect to Prolene  6 mesh, does it meet the same profile?</p> <p>7 A. Yes.</p> <p>8 Q. And what is that profile?</p> <p>9 A. A relatively mild reaction, an acute  10 phase, which is transient and passes, because the  11 implant is biocompatible. The tissue reaction  12 transitions to a low level chronic inflammatory  13 reaction and a fibrotic reaction that encapsulates  14 elements in a three-dimensional way of the mesh.</p> <p>15 And that tissue reaction is sustained  16 through the -- for the duration of each of the  17 studies, and in many of those studies, there is a  18 diminution of that reaction over time.</p> <p>19 Q. And that diminution in the reactions  20 or the change in the reactions that you've just  21 described is what you've described to counsel as a  22 long-term chronic reaction?</p> <p>23 A. That's correct.</p> <p>24 Q. And does the long-term chronic  25 reaction present any risk from a preclinical</p>	<p>1 MR. THORNBURGH: Objection.</p> <p>2 THE WITNESS: Each research  3 institution has an institutional animal care and use  4 committee whose job is to have oversight over all  5 experimental studies and as part of that oversight,  6 requires a literature search of either the public --  7 well, the public and internal databases to make sure  8 that previous studies that have been conducted will  9 not be repeated.</p> <p>10 BY MR. THOMAS:</p> <p>11 Q. After Ethicon obtained the results  12 from the test in 2247, which is a 1973 rabbit test,  13 was there any reason to conduct further tissue  14 reaction studies for this Prolene flat mesh?</p> <p>15 A. No. And all tissue reactions  16 conducted on various iterations of Prolene mesh over  17 time showed a very comparable tissue reaction as  18 described in the 1973 study.</p> <p>19 Q. And so the 12 studies that you site  20 in connection with your porosity analysis all have a  21 consistent tissue reaction profile?</p> <p>22 A. Yes.</p> <p>23 Q. And is the tissue reaction profile  24 that is described in those 12 studies consistent  25 with the language in the IFU that you talked about</p>

## Confidential - Subject to Protective Order

Page 599	Page 601
<p>1 at length with counsel for the plaintiff?</p> <p>2 MR. THORNBURGH: Objection.</p> <p>3 THE WITNESS: Yes, I think so.</p> <p>4 BY MR. THOMAS:</p> <p>5 Q. The next category that you were asked 6 about -- excuse me -- that you were designated on is 7 Section BB. And you were asked to provide the 8 specifics of all clinical, preclinical, and medical 9 testing related to all of the TTV products, and you 10 were responding to the preclinical piece of that.</p> <p>11 Do you recall that?</p> <p>12 A. Yes, I do.</p> <p>13 Q. So as a part of that, you gathered 14 all of the testing that Ethicon did for each of the 15 devices. Is that fair?</p> <p>16 A. That's correct.</p> <p>17 Q. And to the extent that Ethicon 18 leveraged prior testing from Prolene sutures, you've 19 also identified that?</p> <p>20 A. That's correct. They're all 21 relevant.</p> <p>22 Q. Okay. And you did that for the TTV 23 device, correct?</p> <p>24 A. Yes.</p> <p>25 Q. You did that for the TTV-O device?</p>	<p>1 A. Yes.</p> <p>2 Q. And you're prepared to talk about all 3 the biocompatibility testing done for each of those 4 devices?</p> <p>5 A. Yes.</p> <p>6 Q. Now, next category is Category CC, 7 and you were asked to be the person most 8 knowledgeable, Rule 30(b)(6) designee, for animal 9 testing records for biocompatibility as part of the 10 design of the product. Correct?</p> <p>11 A. Yes.</p> <p>12 Q. And here you have listed 64 different 13 documents, correct?</p> <p>14 A. Yes.</p> <p>15 Q. And you're prepared today to talk 16 about all of these 64 documents concerning the 17 animal testing records for biocompatibility as a 18 part of the TTV products?</p> <p>19 A. Yes.</p> <p>20 MR. THORNBURGH: Dave, what section 21 are you on?</p> <p>22 MR. THOMAS: CC, which is called 23 animal testing records for biocompatibility as part 24 of the design of this product.</p> <p>25 BY MR. THOMAS:</p>
<p style="text-align: center;">Page 600</p> <p>1 A. That's correct.</p> <p>2 Q. You did that for the TTV-Secur 3 device?</p> <p>4 A. Yes.</p> <p>5 Q. You did that for the TTV-E device?</p> <p>6 A. That's correct.</p> <p>7 Q. And the TTV-A device?</p> <p>8 A. That's correct.</p> <p>9 Q. And this included any new component 10 parts that were added to any of the TTV devices. 11 You were asked by the plaintiffs to provide that 12 information for all of the tools that might 13 accompany those devices?</p> <p>14 A. That's correct.</p> <p>15 Q. And you have notebooks of all the 16 tests that were conducted on each of those TTV 17 devices here today to talk about the -- every aspect 18 of the -- any new components to any of the TTV 19 devices?</p> <p>20 MR. THORNBURGH: Objection.</p> <p>21 THE WITNESS: Yes.</p> <p>22 BY MR. THOMAS:</p> <p>23 Q. And, also, as a part of this, you 24 have biocompatibility risk assessments for each of 25 these devices. Isn't there?</p>	<p style="text-align: center;">Page 602</p> <p>1 Q. Now, Category DD asks for the person 2 most knowledgeable concerning the evaluation of data 3 and results of any preclinical studies and testing 4 regarding your TTV products and states that all 5 documents responsive to this category have already 6 been identified.</p> <p>7 And so all of the documents that we 8 have just been through are responsive to this 9 category, and you have those here with you today?</p> <p>10 A. That's correct.</p> <p>11 Q. Category EE says the development and 12 coordination of any preclinical studies. And to the 13 extent that you have studies responsive to this 14 category, those have been identified in previous 15 categories as well, and they're here with you today?</p> <p>16 A. That's correct.</p> <p>17 Q. The next category is one that we 18 spent a good deal of time on. Next category deals 19 with the identity of, the location of, and the 20 substance of any and all studies, data, and/or other 21 evidence that form the basis of the following 22 claim/statement included in the attached 23 instructions for use for the TTV products.</p> <p>24 And the statement is that animal 25 studies show that implementation of Prolene mesh</p>

## Confidential - Subject to Protective Order

Page 603	Page 605
<p>1 elicits a minimal inflammatory reaction in tissues,  2 which is transient and is followed by the deposition  3 of a thin, fibrous layer or tissue which can grow  4 through the interstices of the mesh, thus  5 incorporating the mesh to adjacent tissue.</p> <p>6 Your first tab is 1964. Why do you  7 include information from 1964 in the materials that  8 you designate in response to this category?</p> <p>9 A. As -- as we discussed earlier --</p> <p>10 MR. THORNBURGH: Objection.</p> <p>11 THE WITNESS: -- the Prolene  12 polypropylene suture forms the basis for the Prolene  13 polypropylene mesh, the same Prolene polypropylene  14 filament.</p> <p>15 And so any studies that are relevant  16 to the tissue reaction of suture are relevant in a  17 way to the filaments that comprise Prolene  18 polypropylene mesh.</p> <p>19 BY MR. THOMAS:</p> <p>20 Q. And the tissue reaction studies that  21 were part of the NDA were reviewed by FDA in the NDA  22 approval process, correct?</p> <p>23 A. That's correct.</p> <p>24 Q. And FDA ultimately approved the use  25 of the Prolene suture for sale in the United States</p>	<p>1 suture NDA, correct?</p> <p>2 MR. THORNBURGH: Objection.</p> <p>3 THE WITNESS: Yes, that's correct.</p> <p>4 BY MR. THOMAS:</p> <p>5 Q. And that was based upon the studies,  6 one through five, that appear under this section of  7 the disclosure?</p> <p>8 A. Yes, that's correct. Long-term  9 implantation studies and long-term retention of  10 breaking strength.</p> <p>11 Q. Now, if you go to Tab 6, the Miller  12 study, what did you learn about the -- the issue of  13 tissue enzymes in the advent of polypropylene  14 sutures?</p> <p>15 A. This is a paper in the open  16 literature. We can look at it in detail if we need  17 to, which, as you say, is Tab 6.</p> <p>18 But I recall there's some language in  19 there that talks about the Prolene polypropylene  20 suture is resistant to the effects of tissue  21 enzymes.</p> <p>22 Q. And what was it about other sutures  23 in use at the time that created a risk of  24 degradation from tissue enzymes?</p> <p>25 A. Yeah, this is very significant,</p>
<p style="text-align: center;">Page 604</p> <p>1 under the new drug application?</p> <p>2 A. That's correct.</p> <p>3 MR. THORNBURGH: Objection.</p> <p>4 BY MR. THOMAS:</p> <p>5 Q. And FDA ultimately approved the  6 language that appears up above in the IFU in  7 substance for the Prolene suture?</p> <p>8 MR. THORNBURGH: Objection.</p> <p>9 THE WITNESS: That's correct.</p> <p>10 BY MR. THOMAS:</p> <p>11 Q. And the 44 documents that you cite  12 below this category, are all of these consistent  13 with the language that appears in the IFU on which  14 you're designated?</p> <p>15 A. Yes.</p> <p>16 Q. Now, the next category says the  17 material is not absorbed, nor is it subject to  18 degradation or weakening by the action of tissue  19 enzymes.</p> <p>20 Now, this language was also part of  21 the original instruction for use for the  22 polypropylene -- excuse me -- the Prolene suture?</p> <p>23 A. That's correct.</p> <p>24 Q. And this language was specifically  25 approved by the FDA in its approval of the Prolene</p>	<p style="text-align: center;">Page 606</p> <p>1 because at the time, another monofilament suture, as  2 Prolene suture, was catgut suture, and that was made  3 of intestinal collagen from animals, and it's known  4 to degrade over time.</p> <p>5 So to have a suture that doesn't  6 degrade in the presence of tissue enzymes, whether  7 it's placed in the stomach or part of an  8 inflammatory process or it's in the pancreas, that's  9 something that would be new to many surgeons.</p> <p>10 Q. Now, you talked at length about the  11 fact that molecular weight and tensile strength are  12 the two key components for you in preclinical to  13 evaluate the extent to which degradation is a  14 significant event, correct?</p> <p>15 A. Absolutely.</p> <p>16 Q. In any of the 59 -- excuse me -- 49  17 papers, from 1964 to 2013, did you identify any  18 Prolene suture or mesh that underwent degradation in  19 the form of change in molecular weight or loss of  20 tensile strength that caused you concern from a  21 preclinical perspective?</p> <p>22 MR. THORNBURGH: I just want to  23 object to the representation that even molecular  24 weight studies were even done in the 40 or so --  25 40 -- however many studies that are in this list.</p>

## Confidential - Subject to Protective Order

Page 607	Page 609
<p>1           Are you representing to the Court  2    that molecular weight studies were done in each one  3    of these tests?</p> <p>4           MR. THOMAS: No, I'm not. I am  5    asking --</p> <p>6           MR. THORNBURGH: Objection. Move to  7    strike.</p> <p>8           That's a representation that you've  9    been making to this jury this entire time.</p> <p>10          MR. THOMAS: Please. No speeches to  11   the jury. That's not appropriate. You know that.</p> <p>12          MR. THORNBURGH: It's fair  13   representation, honest ones.</p> <p>14          BY MR. THOMAS:</p> <p>15          Q. Dr. Barbolt, with respect to the 49  16   documents that you've identified in response to this  17   issue of the materials not absorbed, nor is it  18   subject to degradation or weakening by the action of  19   tissue enzymes, did you find any information in any  20   form that caused you concern that there was  21   degradation from a preclinical perspective that  22   caused you concern?</p> <p>23          MR. THORNBURGH: Objection.</p> <p>24          THE WITNESS: No.</p> <p>25          BY MR. THOMAS:</p>	<p>1           A. Yes.  2           Q. As a pathologist reviewing the data  3    that's been provided to you, are you able to review  4   that data and determine the extent to which those  5   various grading scales can be analyzed to reach a  6   common result?</p> <p>7           A. Yes.  8           Q. And tell me how you do that.  9           A. Well, you look --</p> <p>10          MR. THORNBURGH: Objection. I don't  11   even understand the question.</p> <p>12          BY MR. THOMAS:</p> <p>13          Q. You can answer the question.  14          A. Answer the question?</p> <p>15          You look at the individual  16   observations from each of the studies and you make a  17   judgment based on the description and the severity  18   scores that might be associated with that  19   observation about what really happened.</p> <p>20          So for me to go back and look at a  21   study conducted under the Sewell scheme that we  22   talked about yesterday, I could reinterpret those  23   results in a manner that I would have recorded the  24   result if I were going to be doing that work today.</p> <p>25          It takes some work, and it needs to</p>
<p style="text-align: center;">Page 608</p> <p>1           Q. Category 4 is the person most  2   knowledgeable regarding a 28-day intramuscular  3   reaction study.</p> <p>4          We already talked about that. That's  5   the study that you did after the positive  6   cytotoxicity study in the Ulmsten device where you  7   then did the intramuscular study to determine the  8   extent to which the TTVT was going to be cytotoxic in  9   vivo.</p> <p>10          A. That's correct.</p> <p>11          Q. And that result was negative?</p> <p>12          A. That's correct. There was no  13   evidence of in vivo cytotoxicity.</p> <p>14          Q. And you were the person who ran that  15   test?</p> <p>16          A. Yes. I was the study director and  17   study pathologist.</p> <p>18          Q. And you're prepared to talk about  19   that test today?</p> <p>20          A. Yes.</p> <p>21          Q. In questioning yesterday, you were  22   shown a variety of grading scales used by  23   pathologists over the years to evaluate tissue  24   response from various implantation studies. Do you  25   recall that?</p>	<p style="text-align: center;">Page 610</p> <p>1          be done by a person trained in histomorphological  2   evaluation, but it's not a difficult task.</p> <p>3          Q. Why do pathologists record in detail  4   what they observe?</p> <p>5          A. That forms the basis for their  6   interpretation of the study results.</p> <p>7          Q. And does that allow someone to come  8   behind them to analyze the extent to which they  9   agree with those findings?</p> <p>10          A. Absolutely. And the -- and the --  11   and the safety mechanism for that is the fact that  12   the slides are considered the ultimate raw data in a  13   pathology study.</p> <p>14          This allows another pathologist to go  15   behind the study pathologist and re-read those  16   slides to generate their own set of data and their  17   own conclusions to see how they compare with the  18   original study pathologist. It's done very  19   commonly.</p> <p>20          Q. And is that the reason why you try to  21   preserve slides where you can of these kinds of  22   studies?</p> <p>23          A. Yes. Yes. Every intention is to  24   maintain raw data as long as possible.</p> <p>25          Q. Now, you talked before in the 91-day</p>

## Confidential - Subject to Protective Order

Page 611	Page 613
<p>1 study, T-2242, you were the pathologist who reviewed 2 those slides, correct? 3 A. That's correct. 4 Q. And you talked about how you may have 5 either recorded the data on an Excel spreadsheet or 6 perhaps made notes before you made your final 7 report; is that right? 8 A. That's correct. 9 Q. And I think you also said that you 10 didn't retain any of the notes that you might have 11 kept on your initial findings that were later 12 recorded in the document which is 2242. Is that 13 fair? 14 A. That's correct. 15 Q. Is that common? 16 A. That's standard industry practice. 17 Q. Tell me what you mean by "standard 18 industry practice." 19 A. Well, pathologists have an 20 opportunity to go back to the original data, that's 21 the slide, this week, next week, some other 22 period -- point in time. 23 Many times studies occur over a long 24 period of time, and a pathologist may be involved in 25 a lot of different studies. So at the end of a long</p>	<p>1 which the study pathologist believes reflects the 2 microslides. 3 Q. In your training, education, and 4 experience in your area of expertise, do 5 histologists keep the notes that they initially make 6 when they ultimately record their findings in their 7 final report? 8 A. No. 9 MR. THORNBURGH: Objection. 10 Are you talking about histologists 11 that have a litigation hold in place? 12 THE WITNESS: It wouldn't matter to 13 me. 14 MR. THOMAS: In 2000, the year, 2000. 15 MR. THORNBURGH: It wouldn't matter 16 to you? 17 MR. THOMAS: Let's take a break. 18 THE VIDEOGRAPHER: Going off the 19 video record at 6:23. 20 This concludes Tape Number 5, 21 Volume 2 in the videotape deposition of Dr. 22 Thomas A. Barbolt. 23 (Short break.) 24 THE VIDEOGRAPHER: We're back on the 25 video record. It's 6:34.</p>
<p style="text-align: center;">Page 612</p> <p>1 period of time, a study pathologist may want to go 2 back and revisit the original observations from the 3 first look. 4 And maybe something that's -- that is 5 observed at a later time point now causes the 6 pathologist to reevaluate those earlier slides. 7 There could be many iterations of slide evaluation. 8 But when I say it's standard industry 9 practice, it's the signed individual animal 10 observations that becomes the raw data for the study 11 report. 12 Q. Okay. Why are your notes not raw 13 data? 14 A. Because they can change over time. 15 Q. Okay. And what is raw data to a 16 pathologist insofar as the histology report goes? 17 A. The slides. 18 Q. And what significance is the report 19 that the pathologist -- the pathologist makes in the 20 study? 21 A. I don't understand the question. 22 Q. Okay. What does the histology report 23 represent insofar as your review of the slides? 24 A. It represents the raw data signed off 25 by the study pathologist. And that's the results</p>	<p style="text-align: center;">Page 614</p> <p>1 This begins Tape Number 6, Volume 2 2 of the videotape deposition of Dr. Thomas A. 3 Barbolt. 4 BY MR. THOMAS: 5 Q. Dr. Barbolt, in response to an 6 objection from Mr. Thornburgh, you volunteered it 7 wouldn't matter to you if there was a litigation 8 hold in place about whether you keep notes. 9 Have you ever destroyed any documents 10 or discarded any documents that you knew were 11 subject to a litigation hold in this case? 12 MR. THORNBURGH: Objection; asked and 13 answered. 14 THE WITNESS: No. 15 BY MR. THOMAS: 16 Q. You were asked a number of questions 17 about preclinical tests and symptoms of delayed 18 wound healing, ulceration, and increased 19 inflammation. 20 Of the studies that we have just been 21 through in great detail, did you see any evidence of 22 delayed wound healing in the tissue integration 23 studies that you reviewed that you would attribute 24 to Prolene mesh? 25 MR. THORNBURGH: Objection.</p>

## Confidential - Subject to Protective Order

Page 615	Page 617
<p>1                   THE WITNESS: No.</p> <p>2   BY MR. THOMAS:</p> <p>3                   Q.   Well, same question for Prolene</p> <p>4    sutures.</p> <p>5                   A.   No.</p> <p>6                   Q.   In all of the studies that we've just</p> <p>7    described in some detail, were you able to find any</p> <p>8    evidence of ulceration in those animal studies that</p> <p>9    you would attribute to Prolene mesh?</p> <p>10                  A.   No.</p> <p>11                  Q.   Were you able to find any evidence of</p> <p>12    ulceration due to Prolene suture in those studies we</p> <p>13    just described?</p> <p>14                  A.   No.</p> <p>15                  Q.   And, finally, of all of the studies</p> <p>16    that we just went through in great length, did you</p> <p>17    find any increased inflammatory response that you</p> <p>18    were able to attribute to any leachables from</p> <p>19    Prolene suture?</p> <p>20                  MR. THORNBURGH: Objection.</p> <p>21                  THE WITNESS: No.</p> <p>22   BY MR. THOMAS:</p> <p>23                  Q.   Were you able to find any increased</p> <p>24    inflammatory response that you were able to</p> <p>25    attribute to leachables from Prolene mesh?</p>	<p>1   degradation, were you able to identify in any of the</p> <p>2   numerous studies that we've just identified any</p> <p>3   increased inflammation that you were able to</p> <p>4   attribute to Prolene mesh?</p> <p>5                  A.   No.</p> <p>6                  (Document marked for identification</p> <p>7    as Exhibit T-2263.)</p> <p>8   BY MR. THOMAS:</p> <p>9                  Q.   Let me show you what I've marked as</p> <p>10   Deposition Exhibit 2263.</p> <p>11                  2263 is the binder that you prepared</p> <p>12   for the seven-year dog study. Do you see that?</p> <p>13                  A.   Yes.</p> <p>14                  Q.   And the seven-year dog study is what</p> <p>15    counsel asked you many questions about I guess</p> <p>16    earlier today. Is that fair?</p> <p>17                  A.   Yes.</p> <p>18                  Q.   And I want to go through that study</p> <p>19    with you a little bit.</p> <p>20                  I'll represent to you that this</p> <p>21    document has in it a number of documents that hadn't</p> <p>22    been marked, and that's why I marked it all</p> <p>23    together. And just because it's going to be</p> <p>24    easier -- and I'll try to save time -- I'm going to</p> <p>25    mark the final report separately, because I can't</p>
<p style="text-align: center;">Page 616</p> <p>1                  A.   No.</p> <p>2                  Q.   Were you able to find any increased</p> <p>3    inflammation that you were able to attribute to</p> <p>4    particle loss for Prolene suture?</p> <p>5                  A.   No.</p> <p>6                  Q.   Were you able to find any increased</p> <p>7    inflammation that you were able to attribute to</p> <p>8    particle loss from Prolene mesh?</p> <p>9                  A.   No.</p> <p>10                 MR. THORNBURGH: Objection.</p> <p>11   BY MR. THOMAS:</p> <p>12                 Q.   Were you able to find in all of those</p> <p>13    studies that we've just discussed any instance of</p> <p>14    delayed wound healing that you were able to</p> <p>15    attribute to degradation of Prolene suture?</p> <p>16                 A.   No.</p> <p>17                 Q.   How about any degradation of Prolene</p> <p>18    mesh?</p> <p>19                 A.   No.</p> <p>20                 Q.   With respect to ulceration, were you</p> <p>21    able to find evidence in any of the studies that</p> <p>22    we've just identified any ulceration that you were</p> <p>23    able to attribute the degradation of Prolene mesh?</p> <p>24                 A.   No.</p> <p>25                 Q.   And, likewise, with respect to</p>	<p style="text-align: center;">Page 618</p> <p>1   put my hands on it very quickly, and I don't want to</p> <p>2   keep you here any longer than I have to.</p> <p>3                  (Document marked for identification</p> <p>4    as Exhibit T-2264.)</p> <p>5                  MR. THOMAS: I'll mark 2264 the same</p> <p>6    report that we marked earlier today. This didn't</p> <p>7    have the folded back front page.</p> <p>8                  Counsel, it's 2264.</p> <p>9   BY MR. THOMAS:</p> <p>10                 Q.   Exhibit 2264 is the October 15, 1992</p> <p>11    report that says: Seven-year data for ten-year</p> <p>12    Prolene. Do you recall that?</p> <p>13                 A.   Yes.</p> <p>14                 Q.   And you were asked a number of</p> <p>15    questions earlier about this document concerning the</p> <p>16    scanning electron microscopy conducted at that time.</p> <p>17    Do you recall that?</p> <p>18                 A.   Yes.</p> <p>19                 Q.   And you identified in the report</p> <p>20    where someone observed cracks on the surface of some</p> <p>21    Prolene mesh. Fair?</p> <p>22                 A.   Yes.</p> <p>23                 Q.   Dr. Barbolt, when does a surface</p> <p>24    crack in Prolene mesh raise preclinical issues that</p> <p>25    need to be investigated further?</p>

## Confidential - Subject to Protective Order

Page 619	Page 621
<p>1        A. When there's a loss in tensile  2        strength. I think that's the -- that would be  3        the -- the final straw. There might be impact on  4        molecular weight, but if there was no impact on  5        tensile strength, that would be the -- that would be  6        the -- the definitive endpoint.</p> <p>7        Q. Why are surface cracks alone, without  8        any evidence of tensile strength issues or molecular  9        weight, why don't they raise preclinical issues for  10       you?</p> <p>11        MR. THORNBURGH: Objection.</p> <p>12        THE WITNESS: Because they don't have  13        an impact on molecular weight, which would be  14        evidence of degradation of polymer chains. And if  15        there were degradation of polymer chains, that would  16        be reflected in a loss in tensile strength.</p> <p>17        So those two endpoints are key  18        preclinical endpoints. Other endpoints are  19        informational. They're not so important if they  20        don't have an impact on those two endpoints.</p> <p>21        BY MR. THOMAS:</p> <p>22        Q. And tell the jury what molecular  23        weight is.</p> <p>24        A. Molecular weight is a measure of the  25        length of the polymer chain. The longer the polymer</p>	<p>1        A change in molecular weight is --  2        MR. THORNBURGH: Same objection. I'm  3        sorry.</p> <p>4        THE WITNESS: -- is a quantitative  5        measure. That would suggest it's quite reliable.  6        And it would be a measure of degradation of the  7        polymer.</p> <p>8        BY MR. THOMAS:</p> <p>9        Q. And what is tensile strength?</p> <p>10       A. Tensile strength is the force  11        required to break a fiber, in a -- in a brief  12        description.</p> <p>13       Q. And why is a loss of tensile strength  14        important to you as a preclinician?</p> <p>15       A. Tensile strength is a measure of  16        fiber integrity. It's a measure of presence or  17        absence of degradation.</p> <p>18       And for suture, it's critical,  19        because if a suture breaks because of a loss of  20        tensile strength, it can have very serious  21        consequences for patients when used for  22        cardiovascular repair.</p> <p>23       And if there is a loss of strength of  24        fiber and in mesh, there could be a reduction in  25        burst strength of the mesh, and so that it doesn't</p>
<p style="text-align: center;">Page 620</p> <p>1        chain, the heavier its weight. And biomaterials are  2        comprised of many chains of polymers. So a higher  3        molecular weight would suggest a polymer, in this  4        case, fiber, with a pretty high tensile strength.</p> <p>5        Q. And what does a change in molecular  6        weight tell you as a preclinician?</p> <p>7        A. It gives a measure of the stability  8        of the polymer.</p> <p>9        Q. If the molecular weight changes, what  10        happened to the polymer?</p> <p>11        MR. THORNBURGH: Objection. Outside  12        the scope of his expertise.</p> <p>13        He's already testified at length that  14        he's not a polymer scientist. I've already asked  15        him these questions, and he couldn't give me answers  16        to them.</p> <p>17        MR. THOMAS: I don't think you asked  18        that question.</p> <p>19        But go ahead.</p> <p>20        MR. THORNBURGH: I did.</p> <p>21        THE WITNESS: Could you repeat,  22        David?</p> <p>23        BY MR. THOMAS:</p> <p>24        Q. What does the change in molecular  25        weight tell you as a preclinician?</p>	<p style="text-align: center;">Page 622</p> <p>1        perform its function as intended.</p> <p>2        Q. On Exhibit 2264, which is the  3        October 15, 1992 report titled, "Seven-Year Data For  4        Ten-Year Prolene Study," ERF-85-219, down under the  5        paragraph headed "IV and GPC," it says: Gel  6        permeation chromatography (GPC) was run on Prolene  7        sutures explanted from dogs after seven years. The  8        GPC data was compared to data from a current 4/0  9        Prolene suture.</p> <p>10       What does that mean?</p> <p>11       A. 4/0 suture was the suture size that  12        was implanted in the dogs. And so to make a  13        relevant comparison, they selected a 4/0 suture out  14        of package to make the comparisons.</p> <p>15       Q. Okay. The results indicate there was  16        no significant difference in molecular weight  17        between the 4/0 Prolene suture and the seven-year  18        explants.</p> <p>19       What significance of that -- is that  20        to you as a preclinician?</p> <p>21        MR. THORNBURGH: Objection.</p> <p>22        THE WITNESS: That is strong evidence  23        that there's no polymer degradation taking place.</p> <p>24        BY MR. THOMAS:</p> <p>25        Q. Turn now, please, to Exhibit 2263.</p>

## Confidential - Subject to Protective Order

Page 623	Page 625
<p>1                   MR. THORNBURGH: What page is that?</p> <p>2   I'm sorry.</p> <p>3                   MR. THOMAS: Exhibit 2263.</p> <p>4   BY MR. THOMAS:</p> <p>5       Q. If you go to the last three pages of</p> <p>6   Exhibit 2263, there is a document titled -- dated</p> <p>7   October 19, 1992.</p> <p>8       And it says: Interim report on the</p> <p>9   physical testing of Prolene, PVDF, Ethilon, and</p> <p>10   Novofil after seven-year subcutaneous implantation</p> <p>11   in the Beagle dogs.</p> <p>12      Do you see that?</p> <p>13      A. Yes.</p> <p>14      Q. And what is a BSR study?</p> <p>15      A. BSR is an acronym that stands for</p> <p>16   breaking strength retention.</p> <p>17      Q. And how does breaking strength</p> <p>18   retention compare to tensile strength?</p> <p>19      A. Breaking strength retention would be</p> <p>20   determined by tensile testing.</p> <p>21       Basically, they would look at out of</p> <p>22   package suture and do tensile testing to determine</p> <p>23   breaking strength. And then they would explant</p> <p>24   suture from these dogs after seven years and do</p> <p>25   similar tensile testing and make a comparison.</p>	<p>1   I'm sorry. What was the last?</p> <p>2                   MR. THOMAS: The analytical chemistry</p> <p>3   department notes. The last two numbers are 218.</p> <p>4                   MR. THORNBURGH: Got it.</p> <p>5   BY MR. THOMAS:</p> <p>6       Q. And do you understand these to be</p> <p>7   notes taken in the analytical chemistry department</p> <p>8   for testing conducted on these mesh -- these suture</p> <p>9   explants?</p> <p>10      A. Yes.</p> <p>11      Q. And down to the bottom of the page,</p> <p>12   it says: Prolene site one and Prolene site six with</p> <p>13   molecular weights of 322,000 and 323,000 compared to</p> <p>14   a molecular weight of 324,000.</p> <p>15       What is the significance of that to</p> <p>16   you as a preclinician?</p> <p>17                   MR. THORNBURGH: Objection.</p> <p>18                   THE WITNESS: The polymer is not</p> <p>19   showing any significant changes in molecular weight.</p> <p>20   And as the comments indicate below, a comparison --</p> <p>21   and this is a summary of that molecular weight data.</p> <p>22       A comparison of seven-year explants</p> <p>23   to current 4/0 Prolene sutures indicates no</p> <p>24   significant degradation.</p> <p>25   BY MR. THOMAS:</p>
<p style="text-align: center;">Page 624</p> <p>1       Q. And in 1992, tests were conducted,</p> <p>2   and it reads here: The attached table shows the</p> <p>3   physical properties of explanted and baseline</p> <p>4   samples of size 5/0 Ethilon, Novofil, Prolene, and</p> <p>5   PVDF (N) sutures up to the seven-year mark of the</p> <p>6   ten-year BSR study.</p> <p>7       Reading further, it says: Novofil</p> <p>8   samples show a corresponding decrease of 14 percent</p> <p>9   in breaking strength, while Prolene and PVDF show no</p> <p>10   significant change after seven years of</p> <p>11   implantation.</p> <p>12       What's the significance of that</p> <p>13   finding to a preclinician in evaluating the</p> <p>14   stability of Prolene sutures?</p> <p>15                   MR. THORNBURGH: Objection.</p> <p>16                   THE WITNESS: That's strong evidence</p> <p>17   that there's no degradation of the polymer fiber.</p> <p>18   BY MR. THOMAS:</p> <p>19      Q. If you go back to Pages Bates Number</p> <p>20   09888218, which is going back from the back -- it's</p> <p>21   a few pages in from the back.</p> <p>22      A. Okay.</p> <p>23      Q. Do you have that?</p> <p>24      A. Yeah.</p> <p>25      MR. THORNBURGH: I am not there yet.</p>	<p style="text-align: center;">Page 626</p> <p>1       Q. And that's dated October 9, 1992,</p> <p>2   down in the lower left by Eugene Muse.</p> <p>3      A. Yes. October 9, 1992.</p> <p>4      Q. If you turn the page and go to 220.</p> <p>5      A. Okay.</p> <p>6      Q. And 220 is a document dated</p> <p>7   September 21, 1992. The analyst's signature, it</p> <p>8   looks like Robin Ragland, and comparing, again,</p> <p>9   Prolene sutures for dog 1995 site three. Do you see</p> <p>10   that?</p> <p>11      A. Yes.</p> <p>12      Q. And the Prolene suture for dog 1995,</p> <p>13   site three, was compared to a current Prolene suture</p> <p>14   4/0.</p> <p>15       Again, what's going on here?</p> <p>16      A. Yeah. This is a comparison of the</p> <p>17   molecular weight of the suture from explant compared</p> <p>18   to a current Prolene suture.</p> <p>19       And the results indicate, as is</p> <p>20   stated, that no degradation has taken place. And</p> <p>21   that's fully supported by the quantitative molecular</p> <p>22   weight data. Those -- that statement and that data</p> <p>23   is very consistent.</p> <p>24      Q. And you go to the next page, which is</p> <p>25   8221, dated August the 5th, 1992, Dan Burkley,</p>

## Confidential - Subject to Protective Order

Page 627	Page 629
<p>1 signed off by Gene Muse, on October 9, 1992.</p> <p>2 Again, they're comparing Prolene</p> <p>3 suture explants for Dog 2019, site two and three, to</p> <p>4 the current Prolene control. Is that correct?</p> <p>5 A. Yes.</p> <p>6 Q. And they're comparing molecular</p> <p>7 weights again?</p> <p>8 A. Yes.</p> <p>9 Q. And what conclusion do they reach in</p> <p>10 October -- in August 1992 about degradation with</p> <p>11 respect to these suture implants?</p> <p>12 A. For samples from this dog, they say</p> <p>13 in the conclusion section: Comparison of seven-year</p> <p>14 explants to current Prolene indicate no molecular</p> <p>15 weight degradation.</p> <p>16 Q. And the next page dated 8222 --</p> <p>17 excuse me -- numbered 8222, again, is submitted</p> <p>18 July 2, 1992.</p> <p>19 A. Okay.</p> <p>20 Q. I am trying to find my Prolene.</p> <p>21 Here it is. In the middle?</p> <p>22 A. Yep.</p> <p>23 Q. There's Dog 2008, site two?</p> <p>24 A. Yes.</p> <p>25 Q. Measure of molecular weight, again,</p>	<p>1 Q. Excuse me. I'm sorry. I have</p> <p>2 misspoken. Strike that.</p> <p>3 What importance as a preclinician is</p> <p>4 that conclusion to you?</p> <p>5 MR. THORNBURGH: Objection.</p> <p>6 THE WITNESS: I think it demonstrates</p> <p>7 the stability of Prolene suture over seven years in</p> <p>8 in vivo -- in vivo system.</p> <p>9 BY MR. THOMAS:</p> <p>10 Q. Do any of the documents, the study</p> <p>11 for the seven-year dog study where there is a</p> <p>12 discussion of these surface cracks on some of the</p> <p>13 explanted sutures in some of the locations -- is</p> <p>14 there any attribution of cause to that cracking?</p> <p>15 MR. THORNBURGH: Objection.</p> <p>16 THE WITNESS: It's simply an</p> <p>17 observation.</p> <p>18 MR. THOMAS: Can we take a break,</p> <p>19 please.</p> <p>20 THE VIDEOGRAPHER: Off the video</p> <p>21 record, 6:55.</p> <p>22 (Short break.)</p> <p>23 THE VIDEOGRAPHER: Back on the video</p> <p>24 record at 7:00 p.m.</p> <p>25 MR. THOMAS: I have no further</p>
<p style="text-align: center;">Page 628</p> <p>1 compared to the control. Do you see that?</p> <p>2 A. Yes.</p> <p>3 Q. And what conclusion is reached in</p> <p>4 1992 about Dog 2008?</p> <p>5 A. For this dog, they're saying</p> <p>6 comparison of current Prolene 4/0 suture indicates</p> <p>7 no significant degradation of seven-year explant.</p> <p>8 Q. Now, we talked before and went</p> <p>9 through in great length about the surface cracking</p> <p>10 that was reserved in the scanning electron</p> <p>11 microscopy. I don't need to go through that again</p> <p>12 in any detail unless you want to.</p> <p>13 A. No thanks.</p> <p>14 Q. But how can you reconcile what was</p> <p>15 found as a preclinician, the findings of the</p> <p>16 scanning electron microscopy with the molecular</p> <p>17 weight tensile strength results that are recorded</p> <p>18 here?</p> <p>19 A. The surface changes are</p> <p>20 informational. However, in my mind as a preclinical</p> <p>21 scientist, they're not having an adverse impact on</p> <p>22 molecular weight or tensile strength of the fiber.</p> <p>23 Q. And what importance as a clinician is</p> <p>24 that conclusion to you?</p> <p>25 A. Well --</p>	<p style="text-align: center;">Page 630</p> <p>1 questions.</p> <p>2 - - -</p> <p>3 FURTHER EXAMINATION</p> <p>4 - - -</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. Doctor, I appreciate that we've all</p> <p>7 been here too long today and we're all tired. I do</p> <p>8 have a couple of questions. I'm going to try to get</p> <p>9 us all out of here as quickly as I can. Okay?</p> <p>10 I want to kind of work backwards. I</p> <p>11 want to turn your attention back to the seven-year</p> <p>12 dog study, which I think was Exhibit Number 2264,</p> <p>13 which included the analytical chemistry department</p> <p>14 notes.</p> <p>15 MR. THOMAS: 2263, I think.</p> <p>16 MR. THORNBURGH: Is it 2263?</p> <p>17 THE WITNESS: Okay.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. Now, there actually was molecular</p> <p>20 weight loss in some of the cracked -- or some of the</p> <p>21 explanted Prolene sutures, wasn't there?</p> <p>22 A. There was no significant changes.</p> <p>23 Q. There was -- answer my question.</p> <p>24 Okay? Because I know we both want to get out of</p> <p>25 here. So answer my question.</p>

## Confidential - Subject to Protective Order

<p style="text-align: center;">Page 631</p> <p>1        There actually was molecular weight 2    loss in some of the explanted Prolene sutures, 3    wasn't there?</p> <p>4        MR. THOMAS: Object to the form of 5    the question.</p> <p>6        THE WITNESS: Let's look at the data. 7    I don't recall the specifics.</p> <p>8    BY MR. THORNBURGH:</p> <p>9        Q. Let's turn to ETHE.MESH.09888222.</p> <p>10      A. 232.</p> <p>11      232.</p> <p>12      Q. Yes. No. 09888222.</p> <p>13      A. 222.</p> <p>14      Q. Are you there?</p> <p>15      A. Yes.</p> <p>16      Q. Dog 2008, site two, was compared to 17    current Prolene 4/0 suture, right?</p> <p>18      A. Yes.</p> <p>19      Q. And the current Prolene suture had a 20    molecular weight of 224,000, and an MN of 60,000, 21    right?</p> <p>22      MR. THOMAS: Object to form. You 23    read that wrong.</p> <p>24      THE WITNESS: No. I think it's 25    324,000.</p>	<p style="text-align: center;">Page 633</p> <p>1        Q. There was a change in the number as 2    well, wasn't there, Doctor?</p> <p>3        A. I wouldn't expect these numbers to 4    come out on top of each other.</p> <p>5        Q. 60,000 in the current Prolene versus 6    53,000 in the explanted Prolene, correct?</p> <p>7        A. That's what it says.</p> <p>8        Q. That would indicate there was a 9    reduction in the number of polymer chains, right?</p> <p>10      MR. THOMAS: Object to the form of 11    the question.</p> <p>12      THE WITNESS: Well, the conclusion 13    says no significant degradation of the seven-year 14    explant.</p> <p>15    BY MR. THORNBURGH:</p> <p>16      Q. Right. The conclusion isn't that 17    there was no degradation; the conclusion is there 18    wasn't significant degradation. But the converse is 19    true, that there was evidence of some degradation, 20    wasn't there, Doctor?</p> <p>21      MR. THOMAS: Object to the form of 22    the question.</p> <p>23      THE WITNESS: What's important to me 24    as a preclinical scientist is what the person doing 25    the work interprets the results and gives a final</p>
<p style="text-align: center;">Page 632</p> <p>1    BY MR. THORNBURGH:</p> <p>2    Q. 324,000?</p> <p>3    A. For MW. And 60,000 for MN.</p> <p>4    Q. Molecular weight was 324,000, 5    correct?</p> <p>6    A. Yes.</p> <p>7    Q. What does MN mean, by the way?</p> <p>8    A. It is a measure of the number of 9    molecular chains versus the average molecular weight 10    of those chains.</p> <p>11    Q. For molecular weight, there was a 12    reduction of the Prolene, current Prolene, compared 13    to the dog explant suture, correct?</p> <p>14    MR. THOMAS: Object to the form of 15    the question.</p> <p>16    THE WITNESS: The number is 17    different, and it's lower.</p> <p>18    BY MR. THORNBURGH:</p> <p>19    Q. It's lower in the explanted Prolene, 20    correct?</p> <p>21    A. Yes, at this site.</p> <p>22    Q. And you said the MN was the number of 23    molecular chains?</p> <p>24    A. Yes, in a general way. Again, I'm 25    not a polymer chemist, but that's my understanding.</p>	<p style="text-align: center;">Page 634</p> <p>1    conclusion.</p> <p>2    I know that these molecular weight 3    numbers can never be identical between samples, 4    because there is a range of molecular weights.</p> <p>5    BY MR. THORNBURGH:</p> <p>6    Q. Answer my question, please, Doctor.</p> <p>7    MR. THOMAS: I think he did.</p> <p>8    BY MR. THORNBURGH:</p> <p>9    Q. The finding here was that there was a 10    reduction in molecular weight, and there was a 11    reduction in the molecular molecules, and that there 12    was some degradation observed of this explant, 13    explanted mesh, correct?</p> <p>14    MR. THOMAS: Object to the form of 15    the question.</p> <p>16    THE WITNESS: These are two numbers. 17    These numbers need to be interpreted.</p> <p>18    BY MR. THORNBURGH:</p> <p>19    Q. You can't interpret those numbers?</p> <p>20    A. They have been interpreted for me as 21    I read this report.</p> <p>22    Q. And there was indication of 23    degradation, wasn't there?</p> <p>24    A. The conclusion say that no 25    significant degradation of a seven-year explant.</p>

## Confidential - Subject to Protective Order

<p style="text-align: right;">Page 635</p> <p>1 Q. Which doesn't mean that there wasn't 2 degradation; it just means that there was 3 degradation but this investigator called it 4 insignificant or not significant. Right?</p> <p>5 MR. THOMAS: Object to the form of 6 the question.</p> <p>7 THE WITNESS: I would disagree.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. If we go to -- that's what the 10 summary is for, too, right, Doctor? Summaries in 11 reports authored by the investigators is to help us 12 understand their interpretation of the data?</p> <p>13 A. Absolutely.</p> <p>14 Q. And if we look at the summary of the 15 conclusions -- which are a summary of the data, 16 right? It's a conclusion of the --</p> <p>17 A. What page are you on?</p> <p>18 Q. I am looking at Page 2 of --</p> <p>19 MR. THOMAS: Dan, just so you know, 20 the full page that talks about molecular weight is 21 2264. The copy that you have is folded over. I 22 gave you a copy of that already.</p> <p>23 MR. THORNBURGH: I don't know what I 24 did with the full page. What is the exhibit number?</p> <p>25 MR. THOMAS: 2264.</p>	<p style="text-align: right;">Page 637</p> <p>1 Q. There's three -- three folks that 2 signed the report, right?</p> <p>3 A. I'm still looking for the summary. I 4 can't find it.</p> <p>5 Q. If you look at Exhibit Number 2264.</p> <p>6 MR. THOMAS: Over there in that stack 7 right there.</p> <p>8 THE WITNESS: Okay.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Okay. And three -- not one Ethicon 11 employee or Ethicon investigator signed this report, 12 but three of them signed the report, right?</p> <p>13 A. Yes.</p> <p>14 Q. Which -- and in the report, their 15 conclusions, the three Ethicon employees who 16 actually participated in the study, their 17 conclusions was that there was degradation in the 18 polypropylene, in the Prolene, right?</p> <p>19 MR. THOMAS: Object to the form of 20 the question.</p> <p>21 BY MR. THORNBURGH:</p> <p>22 Q. That's their conclusion in the 23 report?</p> <p>24 MR. THOMAS: Object to the form of 25 the question.</p>
<p style="text-align: right;">Page 636</p> <p>1 BY MR. THORNBURGH:</p> <p>2 Q. If we look at 2264.</p> <p>3 A. 2264, yes.</p> <p>4 Q. Strike that. Let me just try to see 5 if I can get a clean answer from you, get a clean 6 record.</p> <p>7 You would agree with me that as a 8 scientist, you rely on the conclusions of the 9 investigators who conducted the study, right?</p> <p>10 A. Yes, in large part.</p> <p>11 Q. And the conclusion from the 12 investigator who conducted this study was that there 13 was --</p> <p>14 A. What page are we on now?</p> <p>15 Q. If we look at page -- it's Page 2 of 16 the expert report.</p> <p>17 A. The ETH.MESH. number?</p> <p>18 Q. 2264.</p> <p>19 MR. THOMAS: Object. Who do you 20 attribute to be the investigator? There's three, I 21 believe.</p> <p>22 MR. THORNBURGH: The person who wrote 23 the report.</p> <p>24 MR. THOMAS: There are three.</p> <p>25 BY MR. THORNBURGH:</p>	<p style="text-align: right;">Page 638</p> <p>1 BY MR. THORNBURGH:</p> <p>2 Q. I'm not -- I am not misreading this 3 right, Doctor?</p> <p>4 MR. THOMAS: I think you are, Dan.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. Conclusion. Degradation in Prolene 7 is still increasing, and PVDF, even though a few 8 cracks were found, is still by far the most surface 9 resistant in-house made suture in terms of cracking. 10 I read that correctly, didn't I, 11 Doctor?</p> <p>12 MR. THOMAS: Object to the form of 13 the question.</p> <p>14 THE WITNESS: This is a conclusion 15 for the ophthalmic microscopy and scanning electron 16 microscopy section authored by the Elke Lindemann, 17 the person who did the SEM evaluation.</p> <p>18 BY MR. THORNBURGH:</p> <p>19 Q. And the conclusion, which was signed 20 off on by three Ethicon employees who -- scientists, 21 polymer scientists, right?</p> <p>22 A. Each of the scientists --</p> <p>23 Q. Answer that question first, please.</p> <p>24 A. Each of the scientists' names are 25 against the part of the report for which they signed</p>

## Confidential - Subject to Protective Order

Page 639	Page 641
<p>1 off.</p> <p>2 Q. Three of them participated in the</p> <p>3 study, right?</p> <p>4 A. That's correct.</p> <p>5 Q. And the conclusion on Page 2 says:</p> <p>6 Degradation in Prolene is still increasing, and</p> <p>7 PVDF, even though a few cracks were found, is still</p> <p>8 by far the most surface resistant in-house made</p> <p>9 suture in terms of cracking. Right?</p> <p>10 MR. THOMAS: Object to the form of</p> <p>11 the question.</p> <p>12 THE WITNESS: That's one-third of the</p> <p>13 results of this experiment.</p> <p>14 BY MR. THORNBURGH:</p> <p>15 Q. Well, is that one-third of the</p> <p>16 results of the experiment -- in the experiment, they</p> <p>17 determined that there was degradation, there was</p> <p>18 surface degradation of the Prolene mesh, right?</p> <p>19 A. That's what it says.</p> <p>20 Q. Or Prolene suture.</p> <p>21 And we can see there was a loss in</p> <p>22 molecular weight seen on this explant, right?</p> <p>23 A. Let me get to that section. 222, is</p> <p>24 that the --</p> <p>25 Q. Yes.</p>	<p>1 MR. THORNBURGH: What do you mean?</p> <p>2 MR. THOMAS: Just what I said.</p> <p>3 THE WITNESS: I am looking at Animal</p> <p>4 1995.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. So hold on a second. Let's talk</p> <p>7 about Animal 2008, site two.</p> <p>8 There was a reduction --</p> <p>9 MR. THOMAS: You can do them one at a</p> <p>10 time, Tom. You can do them one at a time. If he</p> <p>11 won't ask you, I'll ask you.</p> <p>12 THE WITNESS: Fine. Okay.</p> <p>13 MR. THORNBURGH: I'll look at all of</p> <p>14 them.</p> <p>15 THE WITNESS: Fine.</p> <p>16 MR. THORNBURGH: I am not afraid of</p> <p>17 the evidence.</p> <p>18 THE WITNESS: Me neither.</p> <p>19 BY MR. THORNBURGH:</p> <p>20 Q. There is a reduction in the molecular</p> <p>21 weight and the number of molecules, right?</p> <p>22 MR. THOMAS: Object to the form of</p> <p>23 the question.</p> <p>24 THE WITNESS: The number is smaller.</p> <p>25 The conclusion is that there's no significant</p>
<p>1 A. Okay. I'm looking at it.</p> <p>2 Q. It doesn't say that there wasn't</p> <p>3 degradation, does it?</p> <p>4 A. Well, I -- let's take a look at all</p> <p>5 the other dogs and see what happened.</p> <p>6 Q. Well, I know you don't want to talk</p> <p>7 about the evidence that's not good for Ethicon, but</p> <p>8 we got to talk about that evidence, too, Doctor.</p> <p>9 MR. THOMAS: Excuse me. Stop, stop.</p> <p>10 Just ask a good question. Don't argue with him.</p> <p>11 MR. THORNBURGH: It was a good</p> <p>12 question.</p> <p>13 MR. THOMAS: Come on. Stop.</p> <p>14 MR. THORNBURGH: It was a good</p> <p>15 question. I'm not making fun of the doctor.</p> <p>16 MR. THOMAS: Do you want to quit?</p> <p>17 We'll quit.</p> <p>18 MR. THORNBURGH: No. That was a good</p> <p>19 question.</p> <p>20 MR. THOMAS: That's ridiculous.</p> <p>21 MR. THORNBURGH: He didn't want to</p> <p>22 answer it because -- because he didn't want -- he</p> <p>23 didn't want the truth to be heard.</p> <p>24 MR. THOMAS: I want you to argue that</p> <p>25 one to the magistrate, to the judge.</p>	<p>1 degradation.</p> <p>2 BY MR. THORNBURGH:</p> <p>3 Q. Oh, by the way, did you talk to these</p> <p>4 investigators about why there was insufficient</p> <p>5 sample for Prolene IV for this study?</p> <p>6 A. No, I did not.</p> <p>7 Q. Did you talk to the investigator --</p> <p>8 A. What are we looking at now?</p> <p>9 Q. Same page, 222.</p> <p>10 A. 222. Insufficient sample for</p> <p>11 inherent viscosity, not molecular weight.</p> <p>12 Q. Insufficient Prolene -- sorry.</p> <p>13 Insufficient sample for Prolene IV. Right. That's</p> <p>14 what that says?</p> <p>15 A. No. No. It's IV which means</p> <p>16 inherent viscosity.</p> <p>17 Q. What is inherent viscosity?</p> <p>18 A. It's another measure of polymer</p> <p>19 characteristics. It's different than a molecular</p> <p>20 weight measurement.</p> <p>21 Q. And that's why it's not included in</p> <p>22 here, right?</p> <p>23 MR. THOMAS: Included where?</p> <p>24 MR. THORNBURGH: Included right below</p> <p>25 for the --</p>

## Confidential - Subject to Protective Order

Page 643	Page 645
<p>1 BY MR. THORNBURGH:</p> <p>2 Q. I assume -- and you can tell me --</p> <p>3 you can answer the question for me, if you can.</p> <p>4 The IV results --</p> <p>5 MR. THOMAS: They're above, Dan.</p> <p>6 MR. THORNBURGH: Hold on one second.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Is this the IV results here?</p> <p>9 A. IV/DLG, that is an IV result.</p> <p>10 Q. Okay. I'm sorry.</p> <p>11 A. They're saying they could not --</p> <p>12 there was insufficient sample to determine an IV</p> <p>13 measurement for Prolene suture.</p> <p>14 Q. And what is an IV measurement?</p> <p>15 A. It represents inherent viscosity,</p> <p>16 again, a measure -- it's a polymer characteristic.</p> <p>17 Q. Would it give us information about</p> <p>18 the loss of the polymer?</p> <p>19 A. I don't know for certain. I think</p> <p>20 it's a different endpoint, but I don't know for</p> <p>21 certain.</p> <p>22 Q. In any case, they're able to test all</p> <p>23 of the other samples except for Prolene for that</p> <p>24 study, right, for IV?</p> <p>25 A. That's what it says, yes.</p>	<p>1 different, and the Dog 2008 site two is a smaller</p> <p>2 number.</p> <p>3 MR. THORNBURGH: Is that the section</p> <p>4 that you wanted me to go back to and ask questions</p> <p>5 about?</p> <p>6 MR. THOMAS: You can ask whatever you</p> <p>7 want to. I'm not going to tell you what to do.</p> <p>8 BY MR. THORNBURGH:</p> <p>9 Q. If you go to 8221.</p> <p>10 A. 8221. Okay.</p> <p>11 Q. There was insufficient sample of</p> <p>12 Prolene for IV again, right?</p> <p>13 A. That's correct.</p> <p>14 Q. Then, also, again, insufficient</p> <p>15 sample of Prolene IV again here, right? You see it</p> <p>16 says insufficient Prolene IV. And then it also says</p> <p>17 insufficient Prolene IV here. And it doesn't give</p> <p>18 numbers for the Prolene.</p> <p>19 MR. THOMAS: It does at the bottom.</p> <p>20 Current molecular weight right there on the bottom.</p> <p>21 MR. THORNBURGH: We're going to talk</p> <p>22 about that -- we're going to talk about that in a</p> <p>23 moment.</p> <p>24 MR. THOMAS: I thought you were</p> <p>25 suggesting --</p>
<p style="text-align: center;">Page 644</p> <p>1 Q. If you go to 8221.</p> <p>2 MR. THOMAS: Do you want to ask the</p> <p>3 rest of the questions about the molecular weight</p> <p>4 down at the bottom of that page?</p> <p>5 MR. THORNBURGH: I see Prolene wasn't</p> <p>6 included in that -- in this section of molecular</p> <p>7 weight. Right?</p> <p>8 MR. THOMAS: Oh, I think it is.</p> <p>9 THE WITNESS: No. That's IV.</p> <p>10 Molecular weight is above to the right.</p> <p>11 BY MR. THORNBURGH:</p> <p>12 Q. Okay. I'm sorry.</p> <p>13 A. So --</p> <p>14 Q. What's this -- what's this data right</p> <p>15 here?</p> <p>16 A. That's -- that's molecular weight</p> <p>17 data for the other suture -- sutures.</p> <p>18 Q. Okay. And the molecular weight data</p> <p>19 here we've already discussed, which showed a</p> <p>20 reduction in the molecular weight from the current</p> <p>21 Prolene to the explant and, also, a reduction in the</p> <p>22 number of molecules, correct?</p> <p>23 MR. THOMAS: Object to the form of</p> <p>24 the question.</p> <p>25 THE WITNESS: The numbers are</p>	<p style="text-align: center;">Page 646</p> <p>1 BY MR. THORNBURGH:</p> <p>2 Q. Because right here, they separate it</p> <p>3 out, right? In both cases, it says insufficient</p> <p>4 sample for Prolene IV.</p> <p>5 A. That is just written twice.</p> <p>6 Q. Do you know why there would be</p> <p>7 insufficient samples for Prolene IV?</p> <p>8 A. No, I do not. I know you need to</p> <p>9 have a certain mass in order to do the experiment.</p> <p>10 And the analytical work was done on the strand</p> <p>11 breaks after Instron testing. So maybe there was</p> <p>12 just not enough mass to run the experiment, a</p> <p>13 certain sample requirement.</p> <p>14 Q. And for molecular weight, current</p> <p>15 Prolene, there's -- the explants in this sample were</p> <p>16 also lower than the -- than the control, correct?</p> <p>17 MR. THOMAS: Object to the form of</p> <p>18 the question. That's not true.</p> <p>19 THE WITNESS: No, that's not correct.</p> <p>20 BY MR. THORNBURGH:</p> <p>21 Q. 334,000 --</p> <p>22 MR. THOMAS: No.</p> <p>23 BY MR. THORNBURGH:</p> <p>24 Q. -- is greater than 331,000.</p> <p>25 MR. THOMAS: You're not reading the</p>

## Confidential - Subject to Protective Order

Page 647	Page 649
<p>1 number right, Dan. It's 324,000.</p> <p>2 MR. THORNBURGH: Oh, okay. I'm</p> <p>3 apparently dyslexic today.</p> <p>4 BY MR. THORNBURGH:</p> <p>5 Q. So there was -- in this -- in this</p> <p>6 sample, there wasn't degradation observed, molecular</p> <p>7 degradation, right?</p> <p>8 A. Well, to use your language from the</p> <p>9 previous dog, there were increases in molecular</p> <p>10 weight for two strands.</p> <p>11 Q. There wasn't molecular weight</p> <p>12 degradation; there wasn't a decrease in the</p> <p>13 molecular weight seen in this sample. Right?</p> <p>14 A. There was an increase.</p> <p>15 Q. There wasn't a reduction in -- there</p> <p>16 wasn't -- look at the conclusion.</p> <p>17 The conclusion was no molecular</p> <p>18 weight degradation, right?</p> <p>19 A. That's right.</p> <p>20 MR. THOMAS: That's fine.</p> <p>21 THE WITNESS: That's right.</p> <p>22 BY MR. THORNBURGH:</p> <p>23 Q. Molecular weight degradation. That's</p> <p>24 what they call it here, right?</p> <p>25 A. That's right. What this is</p>	<p>1 the significance of that in polymer science, but I</p> <p>2 can't shed much light on it.</p> <p>3 Q. You didn't talk to anybody, right?</p> <p>4 A. That's correct.</p> <p>5 Q. You didn't call up Dan Burkley or the</p> <p>6 other two investigators and say, hey, why is</p> <p>7 there -- why weren't you able to do Prolene IV</p> <p>8 studies?</p> <p>9 A. That's correct.</p> <p>10 Q. So the people most knowledgeable</p> <p>11 about that -- that particular issue in this study</p> <p>12 wouldn't include you; it would include somebody</p> <p>13 else?</p> <p>14 A. At this level of detail, yes.</p> <p>15 Q. It would appear, though, that IV had</p> <p>16 analysis -- is related in some way to a degradation</p> <p>17 analysis, right?</p> <p>18 MR. THOMAS: Object to the form of</p> <p>19 the question.</p> <p>20 THE WITNESS: No, I don't think so.</p> <p>21 MR. THORNBURGH: We'll mark as</p> <p>22 Exhibit 2265.</p> <p>23 (Document marked for identification</p> <p>24 as Exhibit T-2265.)</p> <p>25 BY MR. THORNBURGH:</p>
<p style="text-align: center;">Page 648</p> <p>1 suggesting is that molecular weight rises and falls</p> <p>2 in comparison to a control, and the investigator</p> <p>3 needs to make a judgment whether or not the movement</p> <p>4 from the baseline is sufficient to call out</p> <p>5 significant degradation. That's how science works.</p> <p>6 Q. Again, there's insufficient sample</p> <p>7 for Prolene IVs, right?</p> <p>8 MR. THOMAS: What page are we on now?</p> <p>9 MR. THORNBURGH: 8220.</p> <p>10 THE WITNESS: Yes. Insufficient</p> <p>11 sample for the IV test.</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. Why -- why is -- why is -- why are</p> <p>14 these researchers able to run IV testing on all</p> <p>15 other sutures except for Prolene?</p> <p>16 A. I don't know the answer for that.</p> <p>17 Q. Did you ask anybody?</p> <p>18 A. No.</p> <p>19 Q. In every single case, they didn't run</p> <p>20 a test for Prolene IV, right?</p> <p>21 A. For me, the molecular weight</p> <p>22 determination was the most relevant. It may be</p> <p>23 because I understand it a little bit better than IV.</p> <p>24 Clearly, IV is an important</p> <p>25 measurement, but -- maybe someone else can address</p>	<p style="text-align: center;">Page 650</p> <p>1 Q. A degradation analysis of Prolene</p> <p>2 explants.</p> <p>3 MR. THOMAS: Where did this come</p> <p>4 from?</p> <p>5 MR. THORNBURGH: This is --</p> <p>6 MR. THOMAS: A lab notebook?</p> <p>7 MR. THORNBURGH: I believe so, yes.</p> <p>8 MR. THOMAS: We've already told you</p> <p>9 that we're not prepared.</p> <p>10 MR. THORNBURGH: You're not prepared</p> <p>11 to talk about --</p> <p>12 BY MR. THORNBURGH:</p> <p>13 Q. You haven't seen this?</p> <p>14 A. I have not seen this.</p> <p>15 Q. Do you see the date on this?</p> <p>16 MR. THORNBURGH: If he's not prepared</p> <p>17 to tell me or talk about it, then he needs to say</p> <p>18 I'm not prepared to talk about it. I'm going to ask</p> <p>19 one or two questions.</p> <p>20 MR. THOMAS: We're not. We're not</p> <p>21 prepared to talk about it.</p> <p>22 THE WITNESS: I haven't seen it.</p> <p>23 BY MR. THORNBURGH:</p> <p>24 Q. Do you know what melt pointing is,</p> <p>25 melt point test?</p>

## Confidential - Subject to Protective Order

Page 651	Page 653
<p>1        A. No. I can't explain that in any 2 detail.</p> <p>3        Q. Nobody at Ethicon provided you with 4 this study that showed that in 1987, the explants 5 showed that there -- the conclusions from studies of 6 explants was that it was degraded Prolene?</p> <p>7        MR. THOMAS: Object to the form of 8 the question. He's not prepared to talk on this. 9 We've been through this at length.</p> <p>10      BY MR. THORNBURGH:</p> <p>11      Q. My question is: Nobody at Ethicon, 12 nor Ethicon's counsel, provided you with this study 13 that showed the explanted Prolene was degraded?</p> <p>14      MR. THOMAS: Object to the form of 15 the question.</p> <p>16      BY MR. THORNBURGH:</p> <p>17      Q. Right?</p> <p>18      A. I've not seen this. I am not 19 really -- I'm not prepared to talk about it. It is 20 a bit of information in isolation. I don't 21 understand the context. I'd have to look at all -- 22 at all the data around it.</p> <p>23      Q. Nobody -- nobody showed you this 24 conclusion either, or this study either, prior to 25 coming here today, a study that they've had</p>	<p>1        attorneys -- Ethicon has been in possession of this 2 since 1987 -- did not provide this information to 3 you, correct?</p> <p>4        A. I have not seen this information.</p> <p>5        Q. So you're not prepared to talk about 6 that study or any other studies from the notebooks?</p> <p>7        MR. THOMAS: We've already said that 8 a hundred times.</p> <p>9        MR. THORNBURGH: We'll have to come 10 back.</p> <p>11      MR. THOMAS: I understand.</p> <p>12      BY MR. THORNBURGH:</p> <p>13      Q. Now, you represented that there were 14 20 binders in front of you and behind you which 15 included studies that you -- that Ethicon -- 16 Ethicon's attorneys and you compiled together for 17 purposes of this deposition, right?</p> <p>18      A. Yes.</p> <p>19      Q. And you -- you have to agree that 20 many of the studies that were copied and put in 21 these binders are actually duplicates of studies in 22 other binders in front of you, right?</p> <p>23      A. That's correct.</p> <p>24      Q. Many of them, a vast majority of 25 them?</p>
<p>1        apparently in Ethicon's files since 1987, which 2 showed that the explanted meshes -- the explant 3 mesh --</p> <p>4        MR. THOMAS: Are you referring to 5 something new? Or is this the same document?</p> <p>6        MR. THORNBURGH: Same document.</p> <p>7        THE WITNESS: It's a notebook page.</p> <p>8      BY MR. THORNBURGH:</p> <p>9        Q. Nobody showed you this document 10 either?</p> <p>11      A. It's a notebook page.</p> <p>12      Q. Nobody showed you the study results 13 from Professor Godoin? Professor Godoin. Nobody 14 showed you Professor Godoin's explants and the 15 studies that were done on Professor Godoin's 16 explants which showed evidence of polypropylene 17 degradation?</p> <p>18      MR. THOMAS: Object to the form of 19 the question.</p> <p>20      THE WITNESS: If there's anything in 21 any notebooks that you want to talk about, I'm not 22 prepared to talk about it.</p> <p>23      BY MR. THORNBURGH:</p> <p>24      Q. Yeah. So nobody showed you this 25 study, right? Nobody at Ethicon, nor Ethicon's</p>	<p>1        A. That's correct.</p> <p>2        Q. It's not actually 20 binders of 3 different studies. There's 20 binders where the 4 majority of those are duplicate copies, right?</p> <p>5        A. I never represented them as 6 individual lists of studies that were not 7 duplicates.</p> <p>8        Q. I just want to make sure the jury 9 understands. It's not actually 20 binders of 10 studies, of different studies. There's 20 binders 11 with lots of duplication, right?</p> <p>12      A. Yes. There's overlap between the 13 topics of discussion.</p> <p>14      Q. In fact, some studies are contained 15 within -- are duplicated 10 and 11 times in these 16 binders, right?</p> <p>17      A. I don't think there were that many 18 topics for discussion.</p> <p>19      Q. Or duplicated in each one of the 20 topics?</p> <p>21      A. Okay.</p> <p>22      Q. Right? Correct?</p> <p>23      A. That could be so.</p> <p>24      Q. Exhibit 2262, the list of studies.</p> <p>25      A. Okay.</p>

## Confidential - Subject to Protective Order

Page 655	Page 657
<p>1       Q. Now, we've marked that as an exhibit.  2       Do you have it in front of you?  3       A. Yes.  4       Q. Okay. You have a list of studies  5       and -- that you included or somebody included in the  6       degradation section of Exhibit 2262, correct?  7       A. Yes.  8       Q. And can you tell me in exhibit -- or  9       in Study Number 1, study of tissue reaction of  10      colorless and pigmented monofilament polypropylene  11      sutures, was there SEM, SEM EDX, GPC, DTP, or FTIR  12      studies conducted?  13      A. No.  14      Q. And to determine if there was  15      actually actual degradation of the polypropylene in  16      these cases, a number of studies would have to be  17      conducted, right? A number of tests?  18      A. Not necessarily. One can determine  19      quite a bit by looking at the tissue reaction from  20      an implanted material and whether or not there's any  21      evidence that there's cracking, degradation,  22      absorption, edge -- edge erosion.  23      Q. SEM -- SEM --  24      MR. THOMAS: Excuse me.  25      BY MR. THORNBURGH:</p>	<p>1       study.  2       Q. Okay. And then you have degradation  3       here, which could include surface degradation,  4       correct?  5       A. If it were significant enough to be  6       seen at the light microscope level in an H&amp;E  7       section, yes.  8       Q. What do you mean by absorption?  9       A. For absorbable implants, there's an  10      absorption of the material into the surrounding  11      tissues. That's not the case for a non-absorbable,  12      which is Prolene.  13      Q. And what do you mean by "edge  14      erosion"?  15      A. There might be degradation of the  16      surface which would be reflected by inflammatory  17      cells scalloping the perimeter of the implant,  18      fiber.  19      Q. Now, for these studies that you  20      listed here in degradation, the overwhelming  21      majority of these studies weren't studies that  22      looked at FTIR analysis, scanning electron  23      microscopy, scanning electron microscopy EDX, GPC,  24      or those other tests, degradation tests, correct?  25      MR. THOMAS: Object to the form of</p>
<p style="text-align: center;">Page 656</p> <p>1       Q. I'm sorry. I thought you were done.  2       I didn't mean to interrupt you.  3       A. It's all right. I'm done.  4       Q. I see the period. Now -- or I hear  5       the period.  6       Doctor, are you telling the ladies  7       and gentlemen of the jury that SEM analysis alone is  8       sufficient to determine degradation or surface  9       degradation of a polymer fiber?  10      A. Absolutely not.  11      Q. Additional testing could be  12      conducted, right?  13      A. Yeah, as was done in the seven-year  14      dog study.  15      Q. You said that -- you testified a  16      moment ago that one can determine the tissue  17      reaction from implanted material and whether or not  18      there's any evidence that there's cracking,  19      degradation, absorption, edge erosion.  20      So I am going to break that down for  21      a moment. Okay?  22      A. Okay.  23      Q. So one can determine through light  24      microscopy or SEM surface cracks, correct?  25      A. As was done in the seven-year dog</p>	<p style="text-align: center;">Page 658</p> <p>1       the question.  2       THE WITNESS: Yes.  3      BY MR. THORNBURGH:  4       Q. In fact, can you point to any of  5       these studies that you have listed in the  6       degradation section of your -- your notebooks that  7       did FTIR microscopy?  8       A. Seven-year dog study.  9       Q. That's it? That's the only one that  10      you can point to, right?  11      A. Yes.  12      Q. And the seven-year dog study through  13      FTIR found degradation, correct?  14      MR. THOMAS: No. Object to the form  15      of the question.  16      BY MR. THORNBURGH:  17      Q. There were carbonyl bands that were  18      consistent with oxidation, correct?  19      MR. THOMAS: Object to the form of  20      the question.  21      BY MR. THORNBURGH:  22      Q. Correct?  23      A. I recall some language about a  24      possibility of such a thing, but nothing definitive.  25      Q. There were carbonyl bands that were</p>

## Confidential - Subject to Protective Order

Page 659	Page 661
<p>1 seen that were consistent with oxidation, according 2 to the report.</p> <p>3 MR. THOMAS: Object to the form of 4 the question.</p> <p>5 THE WITNESS: No, they -- we can go 6 to the report and look.</p> <p>7 BY MR. THORNBURGH:</p> <p>8 Q. Okay.</p> <p>9 MR. THOMAS: It's on Page 1, I 10 believe.</p> <p>11 THE WITNESS: There would be an 12 ETH.MESH.09888187, whereas I have recalled the 13 statement says, showed possible evidence of slight 14 oxidation.</p> <p>15 BY MR. THORNBURGH:</p> <p>16 Q. So the only study that you listed in 17 your 40 some studies that actually did FTIR 18 microscopy found that the IR spectra obtained for 19 cracked Prolene specimens showed possible evidence 20 of slight oxidation, correct?</p> <p>21 A. I think I just said that.</p> <p>22 Q. Correct?</p> <p>23 A. Yes.</p> <p>24 Q. The only study that you listed in 25 your degradation study -- or degradation list of</p>	<p>1 of -- listen. I am summarizing. 2 The only study -- listen, Dave. I 3 would appreciate if you would stop coaching this 4 witness.</p> <p>5 MR. THOMAS: I am not coaching the 6 witness.</p> <p>7 MR. THORNBURGH: You are. You have 8 been coaching him for the last two days, Dave. I 9 don't do that to you.</p> <p>10 MR. THOMAS: Stop, please.</p> <p>11 MR. THORNBURGH: I have respect for 12 you. I treat you like a professional.</p> <p>13 MR. THOMAS: I bet you do.</p> <p>14 MR. THORNBURGH: You don't treat me 15 like a professional. You don't act professional 16 when I am asking questions. You coach the witness.</p> <p>17 BY MR. THORNBURGH:</p> <p>18 Q. The only study that you listed in 19 your degradation section of the studies that were 20 compiled by you or someone for Ethicon or Ethicon's 21 attorneys say -- show -- showed evidence of -- 22 possible evidence of oxidation and degradation, 23 right?</p> <p>24 A. We've discussed this line several 25 times today.</p>
Page 660	Page 662
<p>1 studies that actually did FTIR microscopy showed 2 evidence of degradation.</p> <p>3 MR. THOMAS: Object to the form of 4 the question.</p> <p>5 BY MR. THORNBURGH:</p> <p>6 Q. Right?</p> <p>7 MR. THOMAS: Object to the form of 8 the question.</p> <p>9 BY MR. THORNBURGH:</p> <p>10 Q. Right, sir?</p> <p>11 A. Can you restate?</p> <p>12 Q. Yeah. Yeah. And I can try to ask in 13 a better way.</p> <p>14 The only study that you can identify 15 right now for the ladies and gentlemen of the jury 16 in your list of degradation studies on Exhibit 2262 17 that actually looked at FTIR microscopy found 18 evidence of oxidation and degradation, correct?</p> <p>19 MR. THOMAS: Object to the form of 20 the question. Read it correctly, please.</p> <p>21 MR. THORNBURGH: Read it correctly? 22 I wasn't reading anything.</p> <p>23 MR. THOMAS: Read what the report 24 says.</p> <p>25 MR. THORNBURGH: There is evidence</p>	<p>1 Q. And the answer is yes, correct? 2 A. It showed possible evidence of slight 3 degradation. What's written is undeniable.</p> <p>4 THE WITNESS: I am hoping to wrap 5 this up soon, Dave. I am running out of steam.</p> <p>6 MR. THOMAS: I understand.</p> <p>7 Just in light of what he said, are 8 you getting close to being finished?</p> <p>9 MR. THORNBURGH: Yeah. I got -- I 10 only have a few little notes here.</p> <p>11 MR. THOMAS: Well, last time that got 12 a little bit too late, and the witness is getting 13 tired. I'm just trying --</p> <p>14 THE WITNESS: I'm getting tired. And 15 if you've got a lot of questions to ask --</p> <p>16 MR. THORNBURGH: I'm tired, too. I'm 17 tired, too.</p> <p>18 THE WITNESS: -- and if it's going to 19 go beyond five minutes, we need to schedule more 20 time.</p> <p>21 MR. THORNBURGH: I'm tired, too, 22 Doctor.</p> <p>23 MR. THOMAS: Let's go. Let's go.</p> <p>24 BY MR. THORNBURGH:</p> <p>25 Q. You're getting paid for your time</p>

## Confidential - Subject to Protective Order

Page 663	Page 665
<p>1 today, aren't you?</p> <p>2 A. Like I said, you've got five minutes.</p> <p>3 I am running out of energy. If you need more time,</p> <p>4 we'll have to reschedule more time.</p> <p>5 Q. How much money are you getting paid</p> <p>6 by the hour by Ethicon to come in here and testify</p> <p>7 as a 30(b)6 witness?</p> <p>8 A. You know that it's \$225 an hour.</p> <p>9 You've asked me before. And that's the same reason</p> <p>10 I gave --</p> <p>11 MR. THOMAS: Whoa, whoa, whoa. Just</p> <p>12 relax. Just don't -- you're asking questions over</p> <p>13 and over again. Let's ask the questions and move</p> <p>14 on.</p> <p>15 MR. THORNBURGH: I hear you. I know</p> <p>16 you're tired. I am going to pass the witness.</p> <p>17 MR. THOMAS: Thank you. That's all</p> <p>18 we have. Thanks very much.</p> <p>19 THE VIDEOGRAPHER: It's now 7:33, and</p> <p>20 we're concluded with Tape Number 6 in the videotape</p> <p>21 deposition of Thomas A Barbolt.</p> <p>22 (Witness excused.)</p> <p>23 (Deposition concluded at</p> <p>24 approximately 7:33 p.m.)</p> <p>25</p>	<p>1 INSTRUCTIONS TO WITNESS</p> <p>2</p> <p>3 Please read your deposition over</p> <p>4 carefully and make any necessary corrections. You</p> <p>5 should state the reason in the appropriate space on</p> <p>6 the errata sheet for any corrections that are made.</p> <p>7 After doing so, please sign the</p> <p>8 errata sheet and date it. It will be attached to</p> <p>9 your deposition.</p> <p>10 It is imperative that you return the</p> <p>11 original errata sheet to the deposing attorney</p> <p>12 within thirty (30) days of receipt of the deposition</p> <p>13 transcript by you. If you fail to do so, the</p> <p>14 deposition transcript may be deemed to be accurate</p> <p>15 and may be used in court.</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
Page 664	Page 666
<p>1</p> <p>2 CERTIFICATE</p> <p>3</p> <p>4</p> <p>5 I HEREBY CERTIFY that the witness was</p> <p>6 duly sworn by me and that the deposition is a true</p> <p>7 record of the testimony given by the witness.</p> <p>8</p> <p>9 It was requested before completion of</p> <p>10 the deposition that the witness, THOMAS A. BARBOLT,</p> <p>11 Ph.D., have the opportunity to read and sign the</p> <p>12 deposition transcript.</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17 MICHELLE L. GRAY, a Registered</p> <p>18 Professional Reporter, Certified</p> <p>19 Shorthand Reporter and Notary Public</p> <p>20 Dated: January 16, 2014</p> <p>21</p> <p>22 (The foregoing certification of this</p> <p>23 transcript does not apply to any reproduction of the</p> <p>24 same by any means, unless under the direct control</p> <p>25 and/or supervision of the certifying reporter.)</p>	<p>1 - - - - -</p> <p>2 E R R A T A</p> <p>3 - - - - -</p> <p>4 PAGE LINE CHANGE</p> <p>5 _____</p> <p>6 _____</p> <p>7 REASON _____</p> <p>8 _____</p> <p>9 REASON _____</p> <p>10 _____</p> <p>11 REASON _____</p> <p>12 _____</p> <p>13 REASON _____</p> <p>14 _____</p> <p>15 REASON _____</p> <p>16 _____</p> <p>17 REASON _____</p> <p>18 _____</p> <p>19 REASON _____</p> <p>20 _____</p> <p>21 REASON _____</p> <p>22 _____</p> <p>23 REASON _____</p> <p>24 _____</p> <p>25 REASON _____</p>